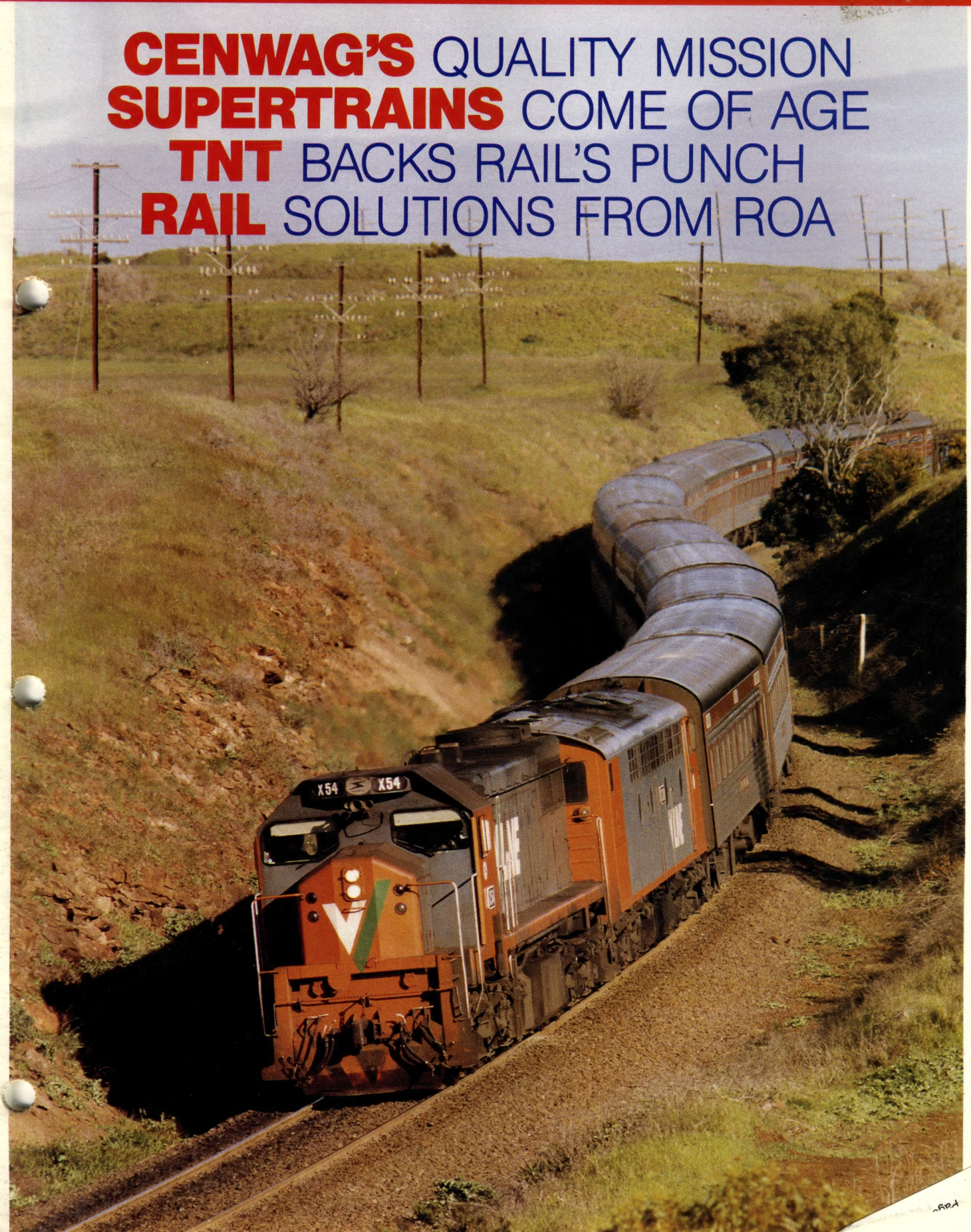
Volume 25, Number 4 October, November, December 1988 Price: $3.00 8810

NETWORK

THE RAILWAYS OF AUSTRALIA QUARTERLY

CENWAG'S QUALITY MISSION
SUPERTRAINS COME OF AGE
TNT BACKS RAIL'S PUNCH
RAIL SOLUTIONS FROM ROA



OMNI®

SHIMLESS FULL DEPTH RUBBER CROSSING

The Best Level Crossing You Can Specify

OMNI shimless rubber crossings are fast and easy to install, and virtually maintenance free.

For decades the only crossing surface materials available were wood, asphalt, or concrete. These crossings often deteriorated rapidly. They needed frequent, costly maintenance. They were dangerous.

Today there's a better way.

The OMNI shimless rubber crossing is tough and durable. It's fast and inexpensive to install. It requires almost no maintenance. And the OMNI crossing can last up to 20 years. So for either new or replacement crossings, when you select OMNI, you're specifying the best crossing available.

New Sales Representative for Australia and New Zealand

Riedel OMNI Products, Inc. is proud to announce that George Moss Ltd. has been appointed sales representative for Australia and New Zealand.

GEMCO's expertise in rail maintenance needs and OMNI's unique full-depth rubber panel design provide a cost effective solution to your level crossing problems. For further information please contact GEMCO's offices at:

George Moss Pty. Ltd.
461 Scarborough Beach Road
Osborne Park
P.O. Box 136 Mt. Hawthorn
Western Australia, 6016
Phone: 446-8844 Fax: (09) 446-3404

George Moss Pty. Ltd.
18 Ross Street
P.O. Box 53, Newstead, 4006
Phone: 852-1812 Fax: (07) 252-2867

RIEDEL OMNI® PRODUCTS, INC.

Want to know more about Australian Railways?

The XPT (Express Passenger Train) just south of Goulburn, N.S.W.

Q.R. General freight train, Rockland.

V/Line blue metal train at Kilmore East.

Westbound passenger train at Crystal Brook, S.A.

Take out a 12 month subscription to 'NETWORK' for only $20!

Posted anywhere in Australia, a NETWORK subscription can bring a great deal of pleasure to the railway enthusiast.

NETWORK is full of colour and interest, and is the only official magazine of Railways of Australia.

Makes an ideal gift too!

Network is published quarterly, in January, April, July and October.

Send the coupon now to:

Circulation Manager, 'NETWORK',
Railways of Australia Committee,
4th Floor, 85 Queen Street,
Melbourne, Victoria 3000.

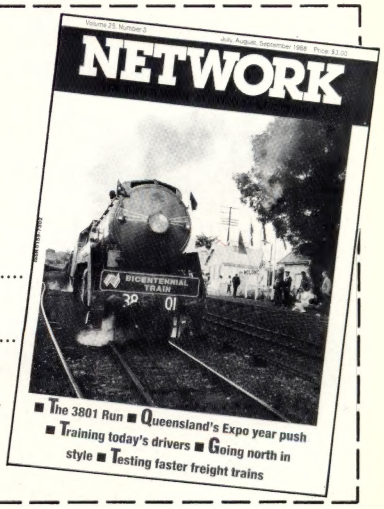
Please mail 'NETWORK' for 12 months to:

Name .....

Address .....

..... Postcode .....

Enclosed is my cheque/money order for $20* being annual subscription.
(*A$25 SURFACE MAIL OVERSEAS)



The clip

PANDROL

Pandrol Australia Pty Ltd,
7 Bessemer Street, Blacktown, NSW 2148.
Ph: (02) 671 6555 Telex: AA24133
28-30 Davison Street, Maddington, WA 6109.
Ph: (09) 459 5255 Telex: AA94531

NETWORK

THE RAILWAYS OF AUSTRALIA QUARTERLY

Volume 25, Number 4
October, November, December 1988

Planning a rail holiday: Visitors to the ROA stand at a holiday and travel exhibition in Melbourne.

CONTENTS

Cover: The Overland in the hills between Bacchus Marsh and Parwan on the last leg of its journey from Adelaide to Melbourne.

Published by the Railways of Australia Committee, 4th Floor, 85 Queen Street, Melbourne 3000.
Tel. (03) 608 0811

Railways of Australia is an association of the government-owned railway systems, comprising:

- *Australian National (including Tasmania)*
- *Queensland Railways*
- *State Rail Authority of New South Wales*
- *State Transport Authority – Victoria (V/Line)*
- *Western Australian Government Railways (Westrail)*

Associate Members:
- Metropolitan Transit Authority of Victoria
- State Transport Authority – South Australia

Editor: Peter Temple

Advertising enquiries:
The Advertising Manager,
Railways of Australia
Network, 4th Floor, 85 Queen Street,
Melbourne, Vic. 3000.
Tel: (03) 608 0811. Telex: AA31109.

State Representatives:
N.S.W.: Patrick Carr Pty Ltd, 1st Floor, FAI Building, 185 Macquarie Street, Sydney, N.S.W. 2000.
Tel. 232 1026, 232 8072

Qld: International Media Services, (Aust.), P.O. Box 224, East Brisbane 4169.
Tel. (07) 393 0758

W.A.: Wilson's Editorial Services, P.O. Box 40, Mirrabooka 6061
Tel. (09) 349 5798

Contributions:
Articles, news and/or photographs (with captions) covering any aspect of rail activity are invited for consideration by the Editor.
Subscriptions (from 1st January, 1989):
Within Australia, $20 per annum (posted).
Overseas A$25 per annum (surface mail).
Overseas Airmail A$45.
The only requirement of contributions to Network is that they be informative or entertaining and that their subjects be relevant to the wide interests of railway people today. Where viewpoints are contrary to those of the editor or Railways of Australia, we must accept that these differences are an essential element of a lively and interesting magazine.
PROUDLY PRINTED IN AUSTRALIA

KEEPING UP THE STANDARDS

M. C. G. SCHRADER

Railways of Australia is a member of the International Union of Railways, the UIC (to use its French initials). From its headquarters in Paris, the UIC fulfills three main tasks:

- Co-ordination of international rail traffic throughout most of continental Europe.
- Operation of a joint rail research facility, the ORE, in Utrecht.
- Dissemination of advanced rail technology to its members in more distant countries, with increasing emphasis on this role in developing economies.

In a day-to-day sense, the first of the tasks is the largest. Obviously, it has least direct interest for Australia – we derive our membership benefits largely from the results of the ORE's research work, and there is certainly a residual, unquantifiable, benefit in belonging to an international body of stature. Australia can feel a national pride in being seen to be a member.

In addition to its meetings throughout the year, the UIC conducts an annual General Assembly. Here the remarkable similarity between the co-ordinating role of UIC in Europe and that of Railways of Australia, on a much smaller scale, becomes apparent. The behind-the-scenes work the UIC must do to provide speedier and safe freight transport, and attractive passenger transport, is great.

The agenda at this year's assembly included items familiar to railway people in Australia who deal with intersystem matters. Among the questions considered were:

- Whether to link a passenger reservations system with one of the airlines, or to develop a "rail only" system.
- Whether automatic vehicle identification should be adopted throughout Europe, and the need to ensure complete standardisation.
- The urgency of agreeing to a principle for higher-speed trains throughout Europe.

These and several others have direct counterparts in Australia. Here we have five separated rail systems, each justifiably self-interested. But at least we owe a common allegiance to one country. In Europe nations run their own rail systems, and it is a tribute to the UIC that visitors to the continent sometimes assume common ownership.

I am told often that the European Railways are "extremely comfortable", "so pleasant to travel on", "so reliable". And I find that the person talking to me has not travelled by train in Australia at all. Such is the power of advertising and of word-of-mouth – think Europe, think Eurailpass. Very few contemplate the work, through the UIC, needed to create this impression.

Thinking travellers will realise that on the continent of Europe, far smaller in area than Australia, with a population many times ours and with a lower car ownership, characteristics of rail travel must be different. And in Australia we also provide our passengers with bargains.

An overnight journey from Paris to Hamburg, first class, costs about $175 for an 11-hour journey of about 1 000km. If you want a sleeper, the cost of a berth in a two-berth compartment is an extra $63. Incidentally, the sleeping berth has a wash basin and a modernised version of the old-fashioned "jerry" in the corner cupboard; private shower facilities in ordinary sleeping cars are unknown.

In Australia, our one-way first class fare between Sydney and Melbourne (about 800km) is just $100. And we'll throw in a sleeping berth for just $37 extra – with access to private shower facilities in twinette cars.

So next time you make comparison, pause to reflect. With similar problems to overcome, Australian railways offer their customers – passenger and freight – a lot. And the effort behind those services, the presentation of a unified front, requires the conquest of problems similar to those faced by the UIC. We can benefit from their experience.

A STATION RENEWED

PERTH GETS A TRANSFORMED STATION FOR ITS ELECTRIC TRAINS

Perth's City Railway Station is being transformed by a $4.5m redevelopment.

While the main station building facing Wellington Street is being retained, the layout of the trackwork, platforms, canopies and footbridges is being changed. At the eastern end, a five-storey carpark is almost finished.

A joint project of Westrail, the Perth City Council and the Western Australian Government, the most obvious change has been the demolition of the old 19th century-style canopy and its replacement by a large "space frame" spanning the whole of the main platform area where the new carpark does not cover the tracks.

The old footbridge adjacent to William Street bridge has been restored and, to help retain the historic feeling of the old station, some of the original canopy trusses have been restored for use over the main station entrance.

The old platform canopies west of the Horseshoe Bridge are being retained, until another building project claims the space.

Now primarily a commuter station with just two daily country trains (the Australind), City Station was once the focal point for suburban, country and interstate passenger trains, and goods trains used the adjacent freight depot (where the Central Bus Station and Entertainment Centre now stand).

Restored historic footbridge at Perth City Station. The new space frame shelter can be seen above the trains.

Goninan quality — for the east, the west and the vast continent between

A. Goninan & Co. Limited is poised to bridge the gap between east and west.

Goninan has already given Sydney a new generation commuter train that combines state-of-the-art technology with space age design — Tangara.

In Western Australia, Goninan is building fifteen Dash 8 locomotives for Westrail. The culmination of an extensive development effort, the Dash 8 is the productivity standard of the industry, the most modern heavy haul diesel electric locomotive in Australia.

So when Australian National Railways called for tenders to design and construct a high speed locomotive for trans-continental service, Goninan brought to the project the commitment and expertise that have become synonomous with Tangara and Dash 8. The Goninan locomotive as proposed to ANR sets new standards in styling and technological excellence. High performance, proven reliability and efficiency are housed in a streamlined structure — a combination designed to haul anything from passenger coaches to fast freight trains across some of the harshest country in the world.

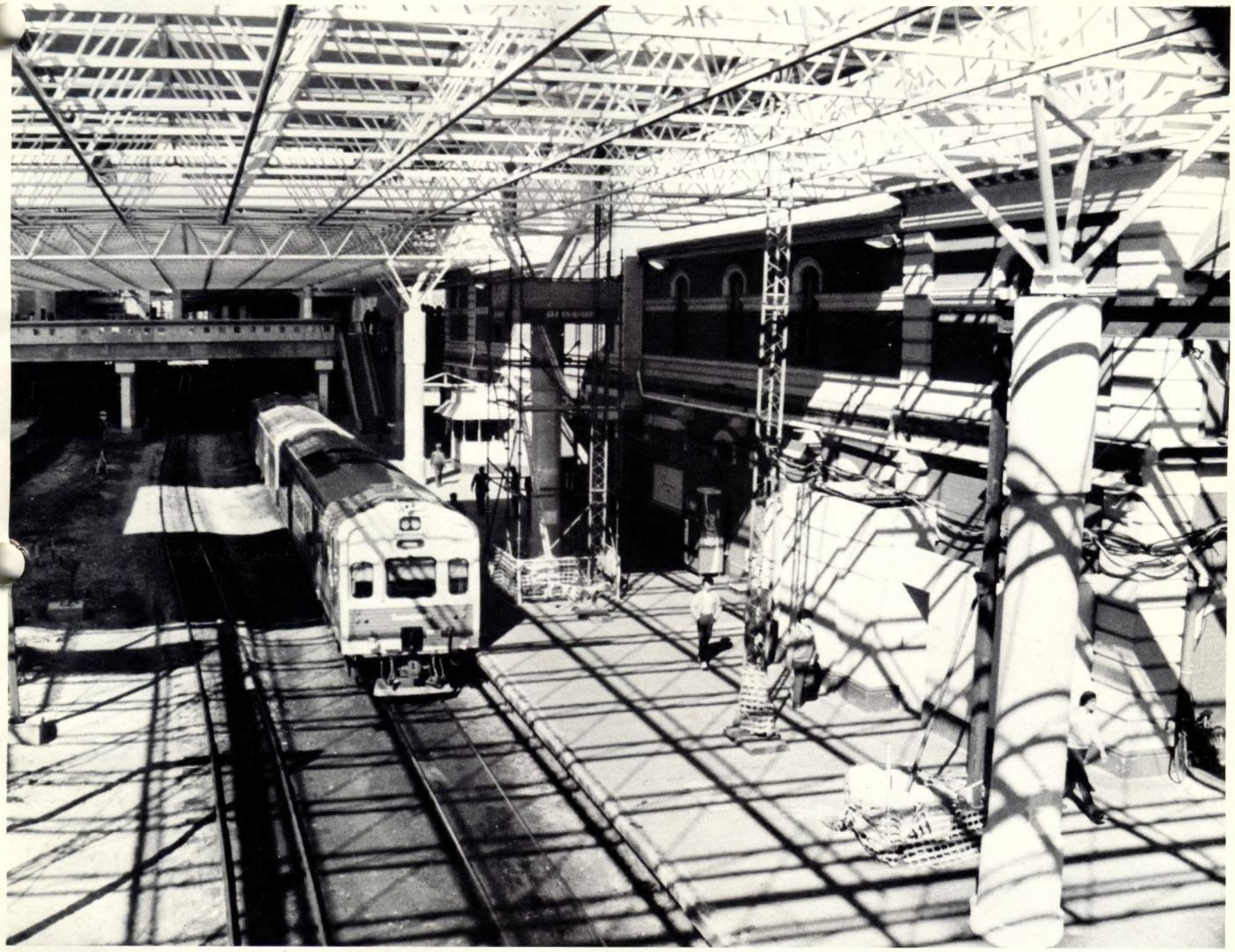
GONINAN
QUALITY

A. GONINAN & CO. LIMITED

Broadmeadow Road, Broadmeadow, P.O. Box 21, Broadmeadow N.S.W. 2292 Australia. Telephone: (049) 69 9299. Telex: AA28061. Facsimile: (049) 69 9250.

A Member of the Howard Smith Group

Peach 3437



The new space frame at Perth City Station will shade the platforms while allowing ample light.

Goods traffic is now handled by Forestfield and Kewdale, while Perth Terminal handles the interstate passenger and country coach traffic.

Mr Don Pearce, Westrail's project co-ordinator for the station redevelopment, said the tracks through the station were being revised to provide three through tracks. The two tracks serving the existing island platforms 5,6,7 and 8 would serve the through-routed Midland-Fremantle trains. Platform 2 would be widened to service the Armadale line, as would a new dead-end platform 4.

"Platform 3 would remain as a dead-end for sole use by the Australind," he said.

Escalators, stairs and lifts will link the island platforms to an above-track concourse at the eastern end of the platforms, adjacent to the new carpark. Immediately off the concourse, at the lowest level of the carpark building, will be restaurants, child-minding centres, and a senior citizens' centre. The overpass leads directly south on to bridges across Wellington Street and into Forrest Plaza, the New Coles-Myer development.

To the north, the same overpass links with the Cultural Centre and Art Gallery. This means the barrier imposed by the station and Wellington Street between the north and south of the city has been removed and better access and amenities for rail travellers provided.

The effect of the whole project is to incorporate a National Trust-listed station building into a functional, comfortable and attractive central rail facility to complement the electric trains that will be servicing it in the near future.

Powerful Experience

A Queensland joint venture for the Main Line Electrification Project

The CLYDE/ASEA-WALKERS joint venture provides Queensland Railways' Electrification Project in Central Queensland with a wealth of engineering experience. This powerful venture combines ASEA know-how and advanced technology in the field of AC electric locomotives, with the extensive experience of Clyde Engineering and Walkers Limited in the design and manufacture of rolling stock.

ASEA has more than 70 years experience in electric traction and in particular more than 15 years experience in electric traction with thyristor techniques.

Clyde Engineering Motive Power Division has been a constant supplier of locomotives and other railway rolling stock for more than 90 years. In 1948 Clyde became the first Associate of the Electro-Motive Division of General Motors Corporation to manufacture the GM diesel electric locomotive outside the domestic USA.

Since that time, Clyde has supplied over 1000 diesel electric locomotives to Australian Railways.

Walkers Limited has been involved in the design and construction of railway rolling stock since 1890. More recently they have supplied large numbers of diesel hydraulic locomotives and stainless steel EMU vehicles to Queensland Railways. A total of 280 EMU vehicles have been ordered so far, including the new inter-urban trains to run between Brisbane and Rockhampton by 1989.

CLYDE/ASEA-WALKERS is able to offer a strength of technical resource and wealth of design and manufacturing experience second to none.

CLYDE/ASEA-WALKERS

A QUEENSLAND JOINT VENTURE

CLYDE ASEA WALKERS

P.O. Box 291, Zillmere, Q. 4034. Phone: (07) 263 3133

KCA 9528

I trust James Watt

Signalling systems are the heart of every rail network.

The N.S.W. State Rail Authority chose the James Watt Group to design and install signalling systems for Sydney's newest rail link – the East Hills Line.

Being independent, James Watt was able to specify and design the equipment and systems *most suited* to this new line.

The James Watt group is undertaking major signalling projects for rail authorities in Queensland and N.S.W. and for rail owners whose resource projects are vital to our country's future.

With over 1100 dedicated professional people James Watt is the *only Australian company* with a complete signalling contracting capability.

Railway operators around Australia are entrusting the design and installation of their new signalling systems to James Watt.

JAMES WATT AUSTRALASIA PTY LTD
20 Queen Street, Revesby NSW 2212
Phone: 774-2000

JAMES WATT GROUP

Independent and Australian

TRACKS

WESTRAIL TACKLES BIGGEST REBUILDING

Westrail is undertaking its biggest and most difficult suburban rail reconstruction project as a preliminary to its $145m electrification project.

The task entails complete rebuilding of the 1.2km of track eastwards from Perth City Station to Claisebrook, where the Midland and Armadale routes separate. The number of tracks is being increased from three to four, while a new station is being built at Moore Street to replace Claisebrook station. Signalling is also being completely replaced by a new Westrail-designed system.

Following several months of work, the big thrust was made during an intensive weekend of track and signalling works in August, the first of four difficult track reconstruction efforts.

Building is also in progress above the eastern end of the City Station, and City Station itself is being modernised and rearranged.

Westrail's chief civil engineer, John Hoare, said that changed traffic demand and the need for economies during electrification, made it necessary to simplify the track layout. It was also desirable to provide separate pairs of tracks for the Midland and Armadale routes between Perth City and Claisebrook to eliminate delays on the single track section of the Armadale line from City to the Bunbury bridge over the Swan River just north of Claisebrook.

The new City Station layout would also provide for through routing of Fremantle-Midland trains through platforms 5, 6, 7 and 8 and termination of Armadale trains at a relocated and widened platform 2 and at platform 4.

On the Perth-Claisebrook section, two junctions required rationalisation to eliminate complex signalling and complex overhead wiring. A mixture of non-immunised colour light signalling and semaphore signals was also replaced with Westrail's new

design.

On the weekend of 12-14 August, no trains ran from 8pm on Friday to midnight on Sunday to enable Westrail to undertake its biggest and most difficult continuous weekend track rebuilding task. The Claisebrook junctions were relaid to a new configuration, and the two new Midland main lines were brought into service. Old signalling was replaced, while new track was laid over the bridge for the new Moore Street pedestrian underpass.

The work enabled the old Midland lines to be removed for the building of the new down Armadale line.

A second weekend closure will see the reconstruction and resignalling of the junctions at the Barrack Street end of City Station, eliminating complex trackwork.

More track closures will allow lowering of the track by 300mm over 500 metres under Barrack Street bridge to make room for the electrical overhead wiring. Track panels are to be rolled out on special Swedish-designed trollies, permitting the track bed to be excavated and reconstructed. The track can then simply be rolled back into place. As the work can be carried out in two stages, no rail services are likely to be affected.

The cost of the City-Claisebrook track work is estimated at $3m. Signalling cost $7m, including $2m for a new train control centre. The project is due for completion in March 1989 when Claisebrook station will close and the new Moore Street station, 600 metres to the west, will open.

Unlike Claisebrook, the new station will serve the Royal Perth Hospital and is well placed for serving the Royal Street area and other planned commercial developments, all potentially important sources of passengers.

Moore Street station will have two side platforms and a central island platform, all 96 metres long to accommodate a standard four-car electric train set. Its design will be similar to that of City West.

On the Fremantle line, four suburban road bridges will require the track to be lowered for extra clearance for the catenary, probably necessitating two weekend rail service closures in early 1989.

Against the clock: work near Perth's City Station in Westrail's biggest suburban track rebuilding.

First of the Five-Pack articulated container wagons on a test run passes a train with triple-deck car carriers.

Westliner high-speed train from Adelaide to Perth conveys piggyback and container traffic at passenger train speeds

CENWAG IS TRACKING QUALITY SERVICE

Cenwag, a contraction of Centralised Wagon Control, is the Railways of Australia group set up in 1978 to improve the co-ordination of intersystem rail freight operations.

In 1981, following a consultant's review of train performance and wagon transits, the concept of Intrans trains was introduced. These trains are the key intersystem services and include the high-flying trains known as Superfreighters and Expressliners. All Intrans trains are monitored throughout their journeys, some of which cover thousands of kilometres and take up to four days. Wagon transits are also monitored to ensure that revenue-earning traffic gets the service it deserves.

Each year Cenwag tracks nearly 100 000 wagon journeys and something like 19 000 individual trains. Cenwag also controls the movement of RAIL (formerly RACE) containers, allocation of bogies to bogie exchange depots, oversight of the daily wagon maintenance levy (interchange) between Systems, and a host of other matters that touch on the achievement of quality performance.

Rollingstock used for intersystem services (some 12 000 wagons) comes under Cenwag oversight. Despite increasing tonnages, the intersystem

fleet has been reducing at around 4 per cent a year, indicating considerable gains in rollingstock productivity from better fleet management.

Cenwag has a staff of seven, five seconded officers and two support staff whose background indicates the diversity of the organisation.

Max Michell, Assistant Director (Intersystem Traffic Control), from V/Line, spent his younger years in Canberra. Geoff Hall, Manager, Wagon Distribution, grew up in Melbourne and is attached to AN (formerly Commonwealth Railways). John Purcell, Rail Container and Computer Co-ordinator, comes from the big timber town of Yarloop and belongs to Westrail. Don Perry, Wagon Transit Officer, started out in Port Pirie and belongs to AN (formerly South Australian Railways). Brian Richmond, Statistical Officer, was raised in Lancashire, England, and is a V/Line officer. Patricia Smith and Elaine Cope provide the support functions for Cenwag.

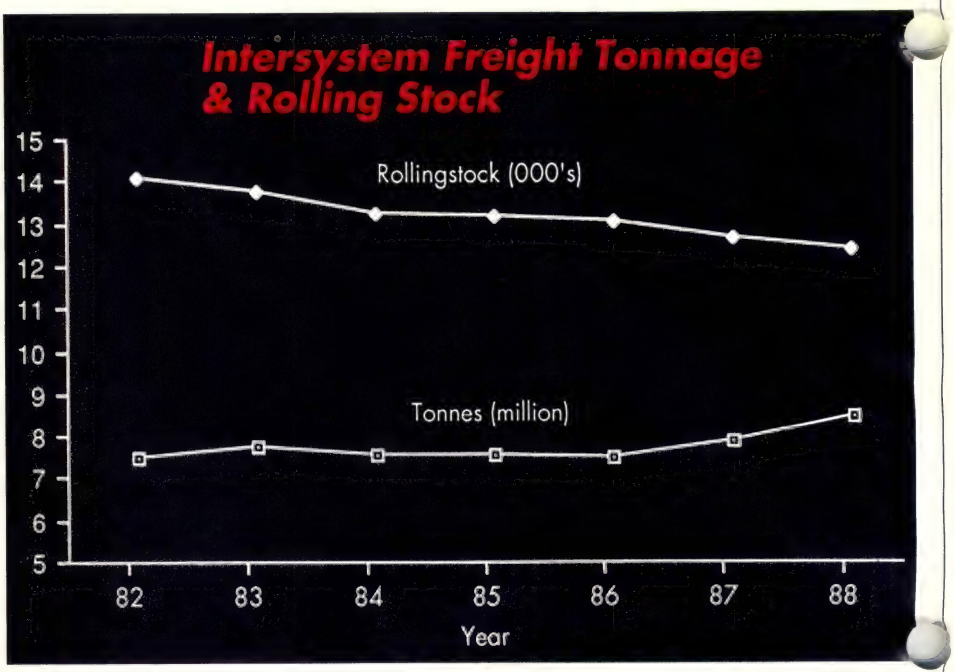
The group relies on good communications. Information on train loads and times is directed to the Cenwag computerised monitoring system, which carries the interesting acronym of ARMS (Australian Railway Monitoring System). This system runs on a minicomputer in the Cenwag office and holds data on more than 20 000 wagons and several hundred trains at any time. It provides information on train loads, train times, wagon whereabouts, wagons in transit, wagon transit times, in transit delays, and wagon group disposition.

Cenwag also has direct access to the AN wagon and train monitoring system (TIMS), the NSW equivalent (RSMS), and a terminal ready to access the V/Line systems (OCS and ROSCO) when they come online later in 1988. Fax and telex machines and telephones are also used.

But what exactly does Cenwag do?

Cenwag's aim is to co-ordinate intersystem freight operations to ensure that freight moves on time to planned schedules and reaches its destinations on time. In other words, it seeks to ensure a quality freight service. (To do this it must also direct empty rollingstock to where it is needed for loading.)

Intersystem freight is no trivial task for Australia's railways. During 1987-88, traffic exceeded 8 million tonnes for the first time, having grown by almost 1 million tonnes in just two years. There is more traffic on all routes – Superfreighter and Linertrain services on the east coast, and Superfreighter, intermodal and steel traffic on the east-west routes. The latter corridor stretches 4000 km from Sydney through to Perth and includes the Melbourne to Adelaide and Perth link.



THE SIGHT OF A 1500-TONNE SUPERFREIGHTER OUTRUNNING THE TRAFFIC SPEAKS OF THE WAY AUSTRALIAN RAILWAYS ARE GOING ABOUT WINNING FREIGHT BUSINESS

Transcontinental traffic has grown remarkably over the last 20 years. Before the east-west standardisation projects were completed in 1970, the then Commonwealth Railways were carrying less than 400 000 tonnes of transcontinental freight a year. This had to be transhipped or bogie exchanged at Melbourne, Port Pirie and Kalgoorlie. Not surprisingly, this was slow and unreliable.

Traffic jumped to around 700 000 tonnes a year by the mid 1970s and is now around 1.8 million tonnes – a 450 per cent increase in 20 years. Where once five trains a week of up to 1700 tonnes were enough, there are now 12 trains a week of up to 6000 tonnes each, plus three high-speed Westliners that can load over 3000 tonnes each. To see a 95-wagon 1.8km long freight with four locos up front powering along at 80km/h is to realise that rail freight is a business for dedicated professionals. And the sight of a 1500 tonne Superfreighter outrunning the traffic on an adjacent highway speaks of the aggressive and successful approach Australian railways are applying to winning new freight business.

Brian Richmond (left), Max Michell and Don Perry watch Geoff Hall as he checks a train load.

Over the last five years or so there has been a reduction in the average transit time of wagons. Superfreighters have had a major effect on reducing transits, but normal express freight trains are also working to faster transit times.

Trains on all routes are now heavier than they were only a few years ago which means more traffic can be handled without increasing track congestion. Wagons can carry heavier loads, and a new all-up weight standard has recently been established for intersystem routes.

Imaginative new rollingstock designs are appearing on trains, including the five-pack articulated container wagons, triple-deck car carriers, high-speed wagons capable of carrying 60 tonnes of containers, a tautliner van, and a variety of specialised wagons to carry the wide range of steel products, including hot slab and jumbo coils. Double stacking of containers is beginning to be seen on the transcontinental route.

These are all ways in which railways are providing a cost-effective service tailored to customers' service and price requirements in the highly competitive land freight market.

Cenwag works closely with the National Freight Group – the ROA freight business arm – to ensure that its operations are directed primarily to meeting the needs and expectations of clients. The two groups meet informally every day and both are represented on all operations and business committees under the ROA banner. Joint activities include rollingstock fleet reviews and forecasts, performance reviews, and the development of strategies to improve performance. Cenwag also deals daily with the operations divisions of all railway systems and frequently with their marketing arms to ensure smooth operations.

"We are involved in an exciting business," says Max Michell. "It is growing rapidly and at the same time shifting more and more to the use of intermodal units.

"The business pressures placed on train services and the rollingstock fleet present an enormous challenge to the railways. Being part of a group involved in meeting those challenges is tremendously satisfying.

"There is a sense of achievement in being able to see worthwhile results from our decisions and actions and to be part of the much wider railway community involved in a dynamic segment of the business."

Patricia Smith (seated) explains a new word-processing package to Elaine Cope and John Purcell.

$96.8M PROFIT FOR QR

COAL, PASSENGERS SET RECORD

Queensland Railways' operating profit in 1987-88 was $96.8m. Changes in the freight rebate on export coal and drought-related reductions in the railings of wheat, sorghum and other grains contributed to the decline from the 1986-87 level of $128.6m.

Queensland Railways carried 74.9 million tonnes of freight, a decrease of 0.4 per cent from the record of the previous year.

Coal was again the principal commodity, haulage increasing by 750,000 tonnes to 62 million tonnes, another record.

In addition, passenger numbers of 46.2 million were the highest recorded in Queensland, exceeding the previous record in 1986-87 by 15.8 per cent.

Annual passenger journeys on the Brisbane suburban system reached a record of almost 45 million, representing an increase of 15.5 per cent.

Although the traffic generated by World Expo 88 from April 30 was a factor in this growth, an improvement in patronage was evident before the opening of the World Fair.

Queensland Railways, the chief means of transport to Expo, scheduled more than 700 extra services each week to cater for the large crowds attending the exhibition.

Revenue earnings for 1987-88 totalled $991.4m, a reduction of 3.6 per cent from the record level in 1986-87.

A decline of 4.9 per cent in revenue from coal traffic was the major cause of the drop in earnings. Concessional freight rates granted to the mining companies, including a substantial write-off of concessions accrued in the previous financial year, resulted in the fall in earnings from coal haulage.

Notwithstanding the payment of award increases granted during the year and the need to meet other extra costs resulting from inflation, working expenses for 1987-88 fell 0.6 per cent to $894.7m.

This significant achievement reflected improved productivity and efficiency. The number of staff declined by 2,100 to 22,500.

NEW VISION FOR SR

There will be no compulsory redundancies on State Rail despite a "complete restructuring" of management, according to State Rail's new chairman-elect and chief executive officer, Ross Sayers.

Mr Sayers was speaking after the announcement of his appointment by the New South Wales Transport Minister, Mr Bruce Baird.

Mr Baird said the appointment of Mr Sayers, chairman of New Zealand Railways, followed a search in Australia and overseas for an outstanding manager to run one of Australia's most complex businesses.

Mr Sayers, 46, married, with two sons, took up his appointment as chief executive on 3 October. He will also succeed Sir Lenox Hewitt, who is to retire as part-time chairman on 6 November.

Mr Sayers told a media conference that any staff lost would be through natural attrition, retirement and voluntary redundancy packages.

Mr Sayers, who described his appointment as a "challenge," said he welcomed strong railway unions.

"I believe in working with unions. The reality is that we both have a common interest. We both want to work for a strong organisation where we are proud to go to work each morning."

After the media conference and a brief meeting with State Rail's board of management, Mr Sayers visited several union leaders. He later described the meetings as "friendly and informative" and said he had been impressed by the calibre of leadership.

Mr Sayers said he saw freight services as an area that could improve State Rail's income.

"I intend to head an aggressive campaign to win back freight, particularly on the Sydney-Melbourne corridor, which now carries only 20 per cent of the freight by rail while 80 per cent is carried by road."

Mr Sayers said many railways elsewhere in the world had faced financial situations as bad or worse as that of State Rail.

"What we will do is adopt the proven successful policies from overseas and adapt them to New South Wales' conditions. There is no need to re-invent the wheel. We can benefit from other networks' experiences.

"But it is not something which can be achieved in five minutes."

Mr Sayers said he believed that the Sydney suburban system would always run at a loss.

"I know of nowhere in the world where suburban commuter systems make money," he said.

Mr Sayers comes to his new job with impressive credentials. While executive chairman of New Zealand Railways, Mr Sayers was also appointed to the board of Airways Corporation, the organisation responsible for running New Zealand's air traffic control system, and was a member of the working party that advised the government on the structure of TV New Zealand and Radio NZ following the deregulation of the broadcasting and telecommunication industries.

Mr Sayers was also one of four Crown Nominees charged with negotiating the question of Maori fishing rights with four senior Maori representatives, and is a trustee of the New Zealand Institute of Economic Research.

Under Mr Sayers, New Zealand Railways improved the efficiency of its operations, in particular the level of service to its customers.

Mr Sayers' positions in the private sector include being group general manager of Feltex New Zealand, and general manager of Feltex Industries. During his five-and-a-half years with Feltex, the branches under his control recorded consistent progress.

As the head of New Zealand Breweries, Mr Sayers trebled the company's profits in two years. Between 1958 and 1975, Mr Sayers was with Holeproof Industries, becoming managing director at the age of 31.

Mr Sayers attended Auckland University and is a chartered accountant. He has also undertaken the advanced management program at Harvard University.

WHAT WE WILL DO IS ADOPT PROVEN POLICIES FROM OVERSEAS AND ADAPT THEM TO NSW.

Ross Sayers, new chief executive of State Rail

CONTAINER PROPHET

NEW MANAGER FOR SOUTH DYNON GROWTH

V/Line's new Container Terminals Manager is Bob Glaubitz, formerly Manager Operations (Landside and Shipside) at the Seatainer terminal in Melbourne.

At V/Line, Bob Glaubitz will be managing the passage of up to 300,000 containers by 1993-94. In 1987-88, 90,000 containers were handled through South Dynon and 30,000 at the Dynon terminal. In the longer term, under plans for a phased redevelopment of South Dynon, annual container throughput could rise to more than 500,000, making it the largest container terminal in Australia.

V/Line plans to merge its broad-gauge operations at the Dynon terminal into one huge complex at South Dynon. Dynon now handles about 30,000 containers a year, mainly through the freight forwarding companies for general and small (consolidated) freight.

At South Dynon, tracks are being lengthened, storage areas increased and new handling equipment introduced to speed up road/rail transfers and increase the handling capacity of the terminal.

The terminal will also have the space to store containers before delivery to clients or to ships for export.

"We are putting the customers first", says Bob Glaubitz. "And we have to keep pace with the increasing speed and efficiency of train operations, especially Superfreighters and Expressliners, to provide a better overall service.

"Already we have a 30 tonne capacity reach stacker, a Belotti B75. There are two 25 tonne capacity top lift forks on order and two prime movers and three trailers for transfer of containers within the terminal.

"We will achieve more lifts every day and better use of the two gantry cranes in loading and unloading containers on rail.

Bob Glaubitz, V/Line's new Container Terminals Manager: "I firmly believe that rail is much more economic than road for long linehauls."

"A client's truck should be able to pick up or deliver containers without waiting in long queues, thereby complementing the excellent overnight service provided by the Superfreighters."

Bob Glaubitz, a former acting chief officer with Royal Interocean Lines, spent nearly 20 years with Seatainer Terminals, moving from supervising materials handling and project developments to the handling of up to 1500 containers every day. Seatainer is Australia's largest container-handling, shiploading and unloading operator.

"I firmly believe that rail is much more economic than road for long linehauls," he says. "The trucking industry is beginning to realise the advantages of rail. All the major freight movers around Australia are investing or will invest in rail containers to increase their business. They will use more hire wagons and Superfreighters, providing rail is reliable and efficient.

"It makes sense to send containers out on the big container trains that carry as much as 30 semi-trailers at a time."

Rail fatigue defect starting at gauge corner (top right) of rail grows under traffic. At the critical size, the rail breaks. Ultrasonic defect detection can ensure that the defect is removed before this happens.

ROA'S COMPUTER DESIGN SYSTEM PRODUCES MONEY-SAVING

RAIL SOLUTIONS

A unique computerised rail design package has been devised as a key element in the Railways of Australia (ROA) co-ordinated technical development programme. The package helps railway engineers choose technically suitable and economical rail sizes and materials when they replace rail or build new tracks.

Modern finite engineering analysis is used to calculate the stresses in rails at different stages of head loss. The stress values are incorporated in a computer programme with predictions of rail head and side wear rates to determine allowable amounts of wear. If only a small amount of wear or none at all is found allowable, the rail is unsuitable.

The computer programme was written by BHP's Melbourne research laboratories in conjunction with ROA. Its use enables rail sections to be worn to a far greater extent than before in some cases. The programme has predicted that 50 to 60 per cent head loss can be tolerated, effectively doubling rail life and saving significant costs in rail replacement.

The rail design package is also used for other tasks, including judging the potential of existing rails to withstand higher loadings. It is one of a number of problem-solving innovations in the ROA techical development programme.

In an attempt to improve productivity, axle loads on all of Australia's railways have increased substantially in recent years. Lightweight four-wheel wagons are rapidly being phased out and replaced with much heavier bogie wagons.

In New South Wales 100-tonne coal wagons have replaced 78-tonne wagons. Queensland Railways have progressively increased wagon size from 64 tonnes to 72 and 80 tonnes, and now 90-tonne wagons are likely. On intersystem traffic, 80-tonne capacity wagons are now the norm. Operating speeds haver also increased, further stressing rails originally designed and selected for lighter trains.

Rail side wear and squashing of the rail level increases rapidly on curves in such conditions. Rail fatigue increase can cause the premature replacement of rail at a cost of more than $100 000/km.

To overcome these problems, engineers have adopted rail grinding and profiling and improved rails such as BHP's recently-developed and head-hardened rail. The introduction of new wheel profiles to improve contact between the wheel and the rail has also helped.

QUEENSLAND'S ELECTRIC INTERCITY INTRODUCES ATC

The introduction of Queensland Railways' new electric intercity express cars in September 1988 between Brisbane and Nambour saw the first commercial application of automatic train control (ATC) in Australia.

ATC, a train safety and control system, provides an independent signals check and brake application system by which the driver's performance is monitored constantly against fixed information points along the track.

Queensland Railways' introduction of ATC has created Australia-wide interest. Many other Australian railway systems, including the State Rail Authority of New South Wales, V/Line, and Westrail, are considering some form of ATC for their train control operations.

Reflecting this interest, 100 people from all states in Australia and Britain attended a technical conference held by the Institution of Railway Signal Engineers in Brisbane on 15 July 1988.

Papers were given by Dennis Walsh, Manager, Consultancy Services, Queensland Railways, on the integration of ATC into Queensland Railways, and Ken Whybird, QR Telecommunications Engineer, on the telecommunication requirements in Queensland's main line electrification.

Reflecting a world-wide trend, the new electric intercity trains will feature driver-only operation when stage four of main line electrification is completed between Brisbane and Rockhampton in mid-1989.

Queensland Railways has had discussions with the unions involved, including the Australian Federated Union of Locomotive Enginemen at federal level, about proposals to introduce driver-only operation throughout the state, beginning with the Brisbane-Rockhampton corridor. A joint management and union group travelled overseas to study driver-only operations.

Queensland Railways' Deputy Commissioner and Secretary, Ross Dunning, said this approach reflected Queensland Railways' belief in consultation as the best way to facilitate the introduction of technology requiring changes in work practices and staff numbers.

A major advantage of ATC is that it assists the driver by reducing the human element in the interpretation of information from signalling systems.

The ATC system can:

☐ Transmit information from track to train.

☐ Present the information in such a way that the driver's work is simplified.

☐ Provide supervision to ensure that the train is driven safely, warn the driver of danger and, if necessary, brake the train.

The ATC system is in two parts – wayside equipment and vehicle equipment.

The wayside beacons are mounted between the rails and communicate with the signalling system via encoders to provide information to be transmitted to the train.

Information from the track on permitted speed levels, warning of impending speed levels, distances (for

One of Queensland Railways' new electric intercity cars introduced on the Brisbane-Nambour run in September. The line will be electric to Rockhampton by mid-1989.

braking application), track gradients and special information of various kinds can be transmitted.

The vehicle equipment includes an antenna to collect information from wayside equipment, a logic unit to evaluate and process information for display or action, and a panel to supply information to the driver.

The display panel mounted above the instrument panel provides both visual and audio information.

Driver training began in late June 1988. Drivers do a five-day qualification theory course followed by 200km of practical tuition. QR has produced a detailed driver's manual.

The new electric intercity cars are carrying visitors from the Sunshine Coast, north of Brisbane, to World Expo 88 in Brisbane. In mid-1989, they enter service between Brisbane and Rockhampton after the completion of the fourth and final stage of the $1090m main line electrification project.

Walkers/ASEA at Maryborough, north of Brisbane, are building the 20 units – eight power pairs and four trailers – at a cost of $30m. The 120km/h cars will operate in four, five and six unit consists carrying up to 276 passengers.

The vehicles are fully air-conditioned, with rotating and reclining seats and airline-type services, including meals and drinks served by attendants between Brisbane and Rockhampton.

The Brisbane – Rockhampton service will be known as the Spirit of Capricorn and will cut the journey from 13½ hours to 9½ hours. It will operate both as a day and overnight train, replacing The Capriconian.

The Spirit of Capricorn will provide Australia's longest electric passenger rail service – 632km.

STATE RAIL'S RECORD YEAR

More people travelled by New South Wales trains this year than in the past 17 years, and passenger services brought in an all-time record revenue. More than 245 million passenger journeys were made, a rise of 9.4 per cent on the year before.

Income reflected the substantial improvement, with $366 million being generated, $53 million more than the previous financial year.

A vigorous marketing and management strategy as well as cost efficiency measures and a reduction in operating costs have contributed to the substantial passenger growth.

Country and interstate services have grown as well as the busier suburban/intercity modes. These have seen a substantial increase of 6.9 per cent in rail weekly ticket sales.

The change of state government in March 1988 led to a policy move fully to deregulate road coaches. This will increase the fierce competition for State Rail's market share in country areas.

Deregulation already introduced in some regions has taken passengers from rail during trough periods, but State Rail has retained its position during busy holiday times such as

COMPUTERISED CONTROL
Right: Section of the new Centralised Traffic Control centre at Broadmeadow. A $24m signalling project based here will end manual signalling along a 125km stretch of NSW's northern line.

CUTTING RAIL TIME
Holsworthy Station on the new East Hills to Glenfield rail link. The new $66.5m line has cut more then 5km from the Campbelltown-Sydney rail route.

New Georges River rail bridge is an important link on the new East Hills to Glenfield rail link in NSW.

Christmas, Easter, and school holidays. In other periods there has been loss in full fare revenue as space is taken by concession travel. The authority sees new moves to deregulation as a challenge, and will make every effort to increase its share of the transport market.

New promotional fare initiatives have been introduced to increase passenger business. A "Budget 7" ticket aimed mainly at the young offers unlimited travel on all services throughout the state at prices for the back-pack market. Standby fares have also been introduced to Brisbane, Melbourne, and Canberra.

A major initiative in the past year has been a sustained fare blitz to combat loss in revenue through fare evasion. This has been an unqualified success, recovering an estimated $11.5 million.

The blitz has been helped by the introduction of an on-the-spot fine system similar to that for parking offences. Offenders have the choice of paying a penalty or having the matter dealt with by a court.

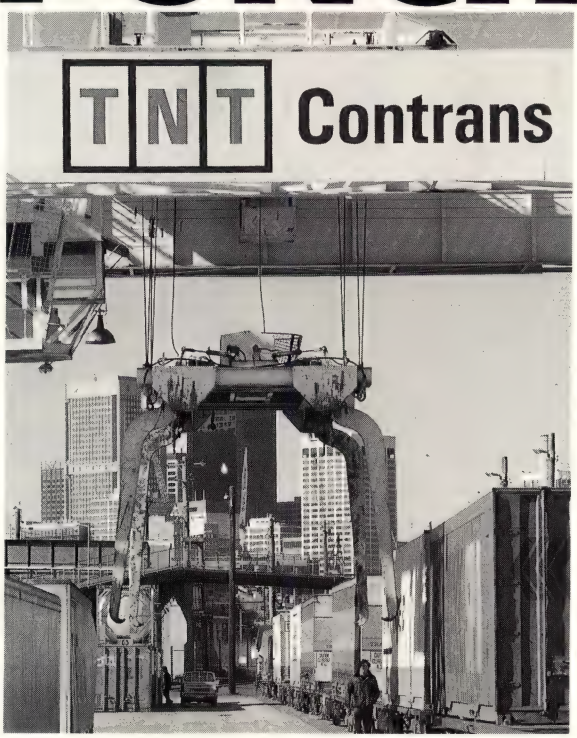
On-time running for suburban services has been the best since the State Rail Authority was formed in 1980, with 86.5 per cent of trains arriving to within three minutes of schedule.

Future passenger needs are being analysed using a strategy study of Sydney's metropolitan and intercity rail network. The strategies developed will cater for passenger demand to the year 2011.

Several major projects were completed and commissioned in 1987/88. They include:

- A new $1.5 million signalling system commissioned at the country centre of Dubbo.
- A $24 million signalling project launched at the Broadmeadow control centre to end manual signalling along a 125km stretch of the state's northern line.
- A $6.7 million operations staff training college, catering for 300 students and 70 staff, opened in the inner-Sydney suburb of Petersham. The unique campus has indoor and outdoor garden areas, facilities for the disabled, and student amenities, a formal training area for technologically advanced teaching of railway employees.
- Opening of a $66.5 million line connecting the East Hills line to the busy southern line, cutting more than 5km from the Campbelltown-Sydney rail route. The stations were built on the new section.
- The first of the new advanced technology Tangara commuter trains entered regular service on the Sydney system. Luxury styling and new computerised features make the Tangara a world leader in rail comfort.

TNT BACK'S RAIL'S PUNCH



TNT, the first operator of the term-hire train and the first to provide door-to-door road/rail services around Australia, has big plans for increasing freight tonnage on rail if all states continue to provide improved, reliable and more competitive services.

TNT is among the big users of rail services, spending more than $50m a year, of which V/Line receives more than $10m.

The deputy general manager of TNT Australia, Graeme John, says few people realise how much TNT has contributed to the Australian rail industry – "not only rail freight in containers and vans, but also new ideas and methods, such as term-hire wagons and the intermodal services."

"We have built our own terminals and invested millions of dollars in people, property and equipment, such as gantry cranes and the development of new wagons, or ways of carrying containers – like the Five-Pack method of putting five platforms on six bogies, a railway development we are now trialling."

TNT moves more than 100 semi-trailer loads on rail in and out of Melbourne every day, says Mr. John.

"Sometimes we are seen to be a huge conglomerate of transport companies which threaten the viability of rail services, whereas we are in partnership together. We want to invest in the future of rail for our mutual benefit.

"TNT comprises a number of individual transport companies involved in different market areas with specialist services in air, sea and land transport. They are mainly smaller, more dynamic companies offering a more personalised service than their competition.

"Between them, these companies use all modes of rail forwarding, from Superfreighters and contract trains to box cars and parcel vans on the Fast Track network," says Graeme John.

TNT has been involved in the development of rail freight services

since World War Two, working with rail authorities.

In 1951, K.W. Thomas Pty Ltd, entered into linehaul contracts for interstate rail freight in box cars for a minimum of 1000 tons a year.

In 1953, the company developed the road/rail door-to-door service and concentrated on establishing a strong road operation. The company went public in January 1962 as Thomas Nationwide Transport.

In 1966, when TNT negotiated the annual hire of rail wagons, it was a new development in rail transport. Specific wagons were allocated and the railways contracted to haul them between capitals for a flat annual rate, payable monthly in advance.

Rail authorities welcomed the term hire of wagons as providing a guaranteed annual income for each wagon on the basis of maximum use and fast turnaround.

TNT was also the first to acquire terminals on railway sites. In 1968, TNT Contrans was formed and leased terminal sites from the railways in Melbourne and Sydney. Gantry cranes were installed for moving containers on and off trains.

There were then 22 term-hire wagons operating between Melbourne and Sydney.

In the next six years, Contrans extended its operations to Adelaide and Brisbane with intermodal transfer facilities. With four terminals in four states, TNT was a world pioneer of whole trains on term-hire running daily or twice daily on the main corridors.

Contrans was also a leader in transporter use, using the bigger Jumbo (12.2 metre) containers and container-carrying trailers for road delivery on prime movers.

Today, Contrans owns 450 Jumbo containers and they are used for its own business (upwards of 400,000 tonnes a year) and by nearly every freight company in the TNT group.

"We are more committed to rail than anyone in the freight business. If the railways give us reliability, we will make it our priority."

Within Australia, the TNT group operates in general freight by road, rail and sea, express freight through Comet, Kwikasair and TNT Air Divisions, and in specialised areas such as bulk mail and list management, garment-on-hanger delivery, and delivery services for computers and other delicate equipment.

In 1987, the TNT Australia group handled 18 million consignments and carried six million tonnes of freight. The group strategy emphasises integration of distribution, speed of delivery and quality of service. Road freight is linked with air, sea and rail

Graeme John, deputy general manager of TNT Australia: "We want to invest in the future of rail for our mutual benefit."

transport in Australia and with air freight in Europe and rail in Canada.

TNT carries freight primarily on a "less than truck load" (LTL) basis by which consignments are picked up and taken to terminals for consolidation with other freight.

TNT has the delivery support services – the fleets of trucks and terminal facilities, the data processing and specialised freight handling equipment – to offer customers a full service. In Australia it offers an overnight national delivery service and it is developing a similar service in Europe.

TNT is now known as the Worldwide Transport Group.

Besides term-hire trains, TNT also uses the Australian rail systems' Superfreighter, the overnight direct-delivery container trains between capital city terminals.

These freight trains have greatly reduced door-to-door transit times between cities. To remain competitive with road, however, rail needs to keep improving transit times and the efficiency and speed of loading and unloading at both ends.

To this end, V/Line is developing its South Dynon terminal into an intermodal container transfer unit with a throughput capacity of 250,000 containers by 1992, almost trebling the number of containers handled there in 1987-88.

Similarly, TNT has plans to upgrade its facilities at the Dynon complex over the road to enable more of its own traffic to be transferred to rail for the inter-capital linehaul.

"One of the immediate results of the formation last year of TNT Express, the integration of Roadfast, Seafast and Railfast, has been a pronounced swing from road to rail between major east coast centres," says Graeme John.

"We want to improve performance and ensure that services remain

competitive by providing even more integrated services Australia-wide.

"It makes sense to plan ahead to meet projected business commitments by consigning full train loads of containers, not just eight, 10 or 16 wagons at a time.

"Also, it is necessary to be able to sort freight consignments at the same place as the gantry cranes are loading and unloading from road to rail and vice versa."

Mr John says TNT wants to develop a facility where all its rail operations (full container loads and less than container loads) can interconnect with rail, road and sea transport and where containers can be loaded or unloaded in order of the forwarder's priority and received and delivered in order of priority.

"Freight is now extremely time-sensitive, making it imperative to handle containers sequentially with a minimum of double handling. Reliability is critical.

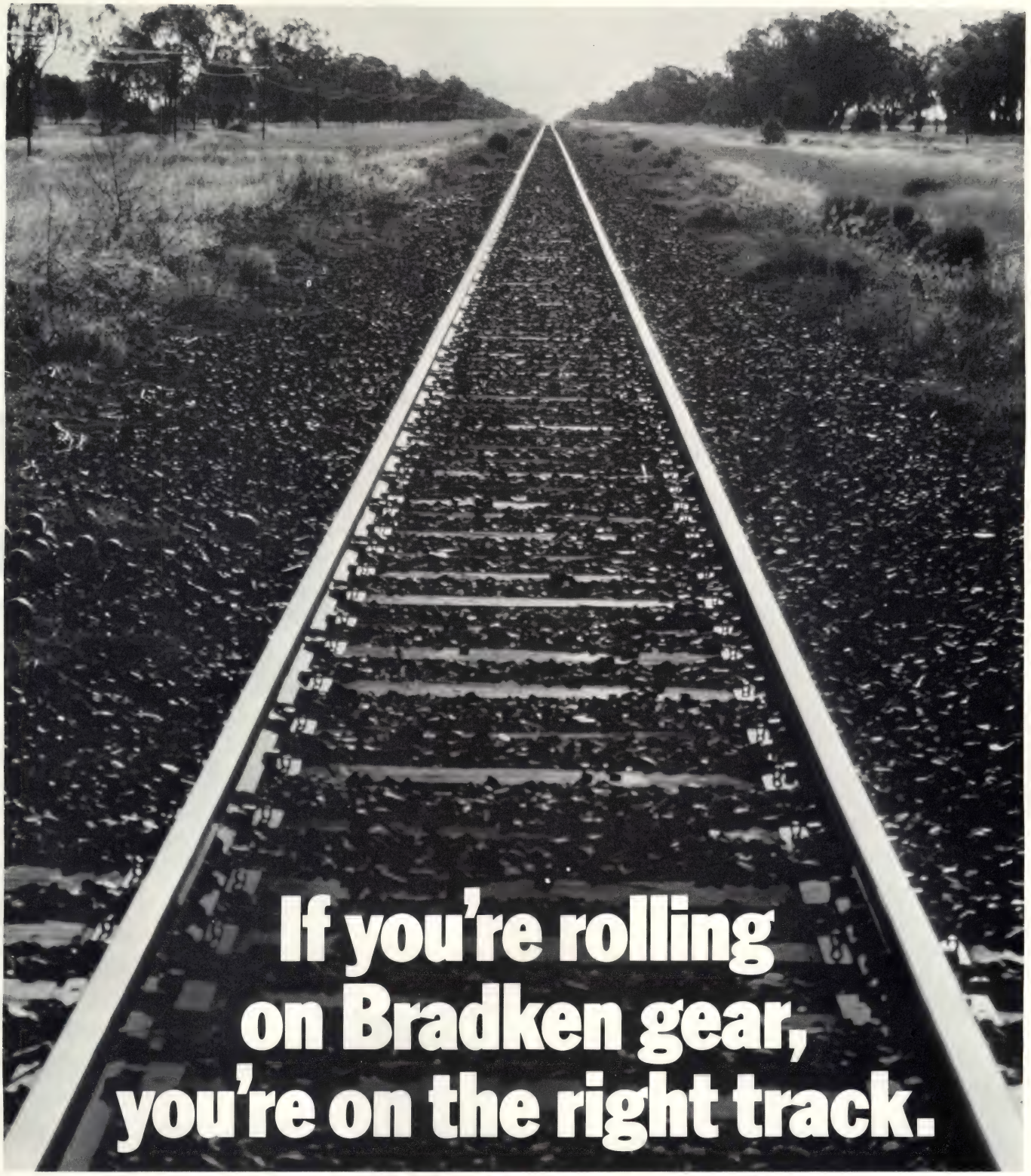
"Our business is the pick up, handling, loading and unloading and redistribution of all freight from small parcels to big tonnages of refrigerated and non-refrigerated time-sensitive freight, using the block container trains for interstate movement.

"We are not in the business of competing against the railways. On present estimates, we would expect to put 60 more weekly Jumbos on rail to New South Wales from Dynon Road, worth more than $4m a year to rail, as a direct result of marketing the benefits of a new TNT intermodal terminal to TNT's existing road customers and from other marketing and operational activities.

"We also envisage a substantial growth in container traffic westwards, particularly refrigerated containers and other just-in-time freight on a reliable priority service," Mr John says.

"We have been in the vanguard of innovation in materials handling and in pioneering door-to-door, term hire, rapid transfer and intermodal terminals for full train loads.

"We are more committed to rail than anyone in the freight business and we put more of that business on rail. If the railways give us the reliability, we will make it our priority."



Reliability and safety are the most pressing needs of any rail system. This is particularly true in a continent as vast as Australia, where freight has to cover great distances across some of the harshest country on earth.

You can give yourself a running start by rolling on Bradken gear. Bradken castings have been meeting the special needs of Australian rail transport systems for over sixty years. Proving themselves reliable, versatile, strong and safe in all applications.

Bradken's proven in-house designs and levels of foundry skills and quality control have won the Company the licence to cast a wide range of railway running gear. Products from ASF, Cardwell Westinghouse, National Castings Incorporated, and Griffin, to name just a few. Which is why it was Bradken who brought you articulated connectors that improved train control, the rotary coupler, the revolutionary parabolic deep-dished wheel and more.

Bradken can adapt designs to suit your specific requirements. But the quality, minimal maintenance cost and on-going product support don't change. Specify Bradken, and you're definitely on the right track.

BRADKEN

Bradken Consolidated, (A Division of The ANI Corporation Limited).
Enquiries to: Rail Transport Division, 22 O'Riordan Street, Alexandria, NSW 2015. Australia. Telephone: (02) 699 3000. Fax: (02) 698 1559.
Foundry Operations: Sydney, Melbourne, Brisbane, Adelaide, Perth and Wodonga.

Strategies BRA 329

The afternoon shadows lengthen as locomotive 3801 leads the Bicentennial train towards Mannahill, South Australia, on its journey from Sydney to Perth.


BICENTENNIAL
TRAIN

HEAVY HAULERS TO MEET

Railways in action will be the theme of the fourth International Heavy Haul Railway Conference, to be held by the Institution of Engineers, Australia, and the International Heavy Haul Association in Brisbane from 11-15 September 1989.

The first heavy haul conference was held in Perth in 1978 because of the importance of heavy haul commodity transport in Australian railways. The Pilbara iron ore railroads had a great deal to do with it. An International Heavy Haul Association was formed, and regular conferences have been held since.

The 1989 conference programme covers a wide range of topics in the fields of heavy haul railway operation, organisation, and engineering. The present state of technology and directions for future development will be discussed, and the benefits of applied research demonstrated.

Parallel technical sessions will allow a wide variety of papers to be presented and give delegates a choice of subjects. Workshop sessions have been arranged so that delegates can attend up to five. If there is enough interest, technical visits will be repeated to enable delegates to participate in as many events as possible.

There will be technical workshops on:

- Track materials, rails, points and crossings.
- Track support — sleepers, ballast performance and specifications.
- Track geometry — analysis and rectification.
- Rail/wheel welding.
- Rail/wheel cleanliness — cost benefits.
- Energy — wheel/rail interaction.
- Train operations — modelling, software and application (for example, ATCS)/fuel consumption.
- PCs in industry — technical/economic modelling and future requirements.
- Locomotive selection — electric versus diesel.
- Maintenance practices — cyclic versus "as needed," component identification.
- Electrification infrastructure.
- Bogie selection — three piece versus "improved."
- Communications.

The emphasis in workshops will be on discussion stimulated by a few brief presentations. These sessions should be a highlight of the conference.

As not all delegates may wish to attend every workshop, arrangements have been made for visits to places of technical interest in and around Brisbane on these afternoons.

Subject to availability and numbers of delegates wishing to attend, these will include:

- Display of electric locomotives used by Queensland Railways.
- Queensland Railways maintenance facility for diesel-electric locomotives at Redbank.
- Wheel and bogie manufacturing facility (Bradford Kendall Foundry at Runcorn).
- Traction transformer and switchgear manufacturing facility (GEC factory at Rocklea).
- Display of track machines at Acacia Ridge yard.
- Signalling and Traction Control Centre for the Brisbane Metropolitan area at Mayne.
- CTC Control Centre for the Brisbane-Bundaberg main line at the Railway Administration Centre, Brisbane.
- Bulk grain and coal handling facilities at Brisbane's Fisherman Islands port.

A post-conference technical tour will enable delegates to observe an operating heavy haul railway at first hand. The Goonyella railway system in North Queensland carries 700 000 tonnes of coal a week in 148 car trains from eight mines to the ports of Hay Point and Dalrymple Bay. Further information about the conference and tours may be obtained from the conference manager, Fourth International Heavy Haul Railway Conference, The Institution of Engineers, Australia, 11 National Circuit, Barton, ACT 2600. Telephone (062) 70 6549.

WESTRAIL ORDERS 15 NEW LOCOMOTIVES

Westrail has awarded a $40m contract to A. Goninan and Company for the supply of 15 General Electric diesel electric locomotives.

The first new locomotives for Westrail in six years, the P class are due to begin arriving in September 1989. They will be 2000 kilowatt Co-Co (six motor-driven axles on two bogies), powered by a 12-cylinder, 4-stroke turbo-charged engine, and will be the first computer-controlled locos on Westrail.

Construction will take place in WA, where Goninans are expected to buy the Comeng factory at Bassendean and convert it.

The GE Dash-8 locomotives are "well proven, state-of-the-art" machines, says Westrail's acting chief mechanical engineer, Brian Cornish.

On-board microprocessors will identify faults at the push of a button. All auxiliaries will be electrically driven and there will be no need for shaft alignment. Auxiliary loads such as pumps and fans are driven by individual alternating current motors when needed, thereby saving fuel.

The P class will replace 21 R, RA and C class English Electrics and a couple of A class Clyde-GM diesels, virtually eliminating the British breed from Westrail. Greater fuel economy and other operating advantages make it now economical to replace the 20-year-old diesels, Mr Cornish says.

Although having an axle load of 16.7 tonnes, the new locomotives feature a reduced unsprung weight that will allow them to operate on track designed for 16-tonne axle load capacity, allowing bigger payloads on existing track.

THE SUPERTRAIN COMES OF AGE

SUPERFREIGHTERS, INTRODUCED BY STATE RAIL, HAVE BEEN SO SUCCESSFUL THAT THE SYSTEM IS TO BE A NATIONAL NETWORK

Superfreighter overnight container trains between capitals, introduced by the New South Wales State Rail Authority five years ago, have been spectacularly successful in the extremely competitive interstate freight market. They have taken about a quarter of the major overnight freight between Sydney and Melbourne, and the SRA plans to more than double this by 1992.

Now all state rail systems, acting through the National Freight Committee, have agreed to market a national network of container trains together under the name Superfreighter.

"Superfreighter has shown the marketplace that the railways can perform reliably in a highly competitive area and increase their market share," said Vince O'Rourke, NSW SRA General Manager, Freight Services. "It has brought about a whole change in market perception of railways – and is only in its early stages of development."

Superfreighter started in October 1983 with a small 500-tonne train between Sydney and Melbourne. (Mr O'Rourke now admits it carried no paying freight, only a few empty containers for show.) Rail traditionalists in New South Wales and other states were outraged by the idea of a freight train that departed every night on a fixed schedule whether it had a load or not.

Even worse from their point of view was the fact that Superfreighter always had the best equipment available – the latest locomotives and newest high-speed wagons.

Mr O'Rourke cheerfully admits that launching Superfreighter was a "risk decision" and a major departure from established railway decision-making style. "We did not research the whole thing to death as railways usually do," he said. "We did it rather quickly."

Today there is close co-operation between states on Superfreighter. Talented young managers are able to make significant decisions on the spot without going to the top for approval, as was previously demanded by railway tradition.

Clients can book containers door-to-door with a single phonecall to the SRA's computer booking system, which makes the transaction almost

as simple as booking a seat on an airline. Computer tracking means that a client anywhere in Australia can be told at any time exactly where his container is, whether it is moving on a train, being transferred through a terminal, or on a truck on its way to delivery.

Superfreighter sales representatives see that clients get a more personal service as well as one that is physically better.

The key Superfreighter market is long-haul high-volume containerised freight, which makes up about 80 per cent of Australia's overnight inter-capital express general freight handled by both road and rail. The only express freight Superfreighter cannot realistically hope to win away from road transport is the premium courier and speed-envelope market that makes up the remaining 20 per cent. This guarantees individual pick-ups until mid-evening for early morning delivery.

Superfreighter allows freight forwarders to accept freight for consolidation into containers until late afternoon. It is generally delivered in Melbourne and Sydney by noon the next day.

"Superpak" is a new service being launched by Superfreighter for clients who cannot or do not wish to provide their own containers. These clients will now be able to hire or lease containers from Superfreighter. A private contractor has been appointed to clean and refurbish containers and deliver them to the client's door.

A variety of containers is available. Within a short time a third of the 580-container fleet will be new curtain-sided "tautliners". These containers have whole sides that can be opened up, allowing much faster and more efficient loading than traditional containers with end or side doors. With two forklifts working, a tautliner can be fully stowed at a customer's premises and be on its way in 15 to 20 minutes – even allowing time for extra loose parcels to be fitted into spare corners above the main load.

The tautliner system is already extensively used on articulated road vehicle trailers, and is being adopted by increasing numbers of high-volume operators. Its use on new intermodal containers that can be carried by road or rail gives the SRA a major cost-efficiency advantage over its competitors.

Neil Johns, NSW SRA's Manager, Superfreighters, is one of the new breed of young managers who have reached responsible positions far earlier than they would have under traditional railways staff promotion schemes.

"Superfreighter has changed the nature of container movements in Australia," he said. "Before 1983 they were not a big part of railway business. Anyone who said then that they would grow at 20 per cent a year and double in five years would have been laughed at."

Today almost half of all interstate rail freight moves by container, and SRA revenue from container movement has doubled.
"Superfreighter means the SRA leads the market rather than the market leading us," said Mr Johns. "It puts us one step ahead.

"Previous railway policy was to get the freight and then work out how to move it. Only when freight was sitting in the yard waiting to move would people start thinking about where to find wagons for it.

"Superfreighter will run tonight and every night from Chullora, even if it is empty or has just one container on it."

Usually, however, Superfreighter carries about 70 containers a night. This is close to its current maximum load of 1 500 tonnes. Work is under way to expand train capacity to 2 000 tonnes.

Vince O'Rourke points out that Superfreighter's speed and high level reliability have been catalysts for improved performance in many other rail freight services.

"Forwarder freight trains and others are now running faster and more reliably after Superfreighter showed what could be done. Superfreighter is the vehicle for a host of changes in railways.

"What railway people have to realise is that freight customers are not really interested in trains as trains.

THE AVERAGE TURNAROUND TIME FOR A COMPLETE SUPERTRAIN IS FOUR HOURS — A PERFORMANCE THAT LEAVES OLD SCHOOL RAILWAYMEN GASPING.

All they want is to be able to rely on a container's leaving their door on time and turning up on time at the right door somewhere else."

He is particularly pleased at the way the success of the service has boosted the morale of staff involved with it. "They feel good about it – it is great to see something that is performing well," he said.

Superfreighter operations are far removed from the usual public perception of railways as fusty, hidebound, slow, and inefficient. Trains leave Chullora over an electronic weighbridge that weighs the wagons in motion. Driver-controllers use radio communications to keep trains moving, so that the cab often sounds like the cockpit of an aircraft at a busy airport.

Efficient terminal operations are a key to the success of Superfreighter. Modern terminals with modern and efficient cargo-handling equipment quickly transfer containers from trucks to trains and back again, so that freight spends as little time as possible waiting to move on the next stage of its journey.

The average turnaround time for a complete Supertrain in Sydney, including the exchange of all containers, is four hours – a performance that leaves railway traditionalists gasping.

Leaving the old Darling Harbour goods yards in Sydney and moving to Chullora in 1983 was a major breakthrough for the NSW SRA, enabling it to mount more efficient freight services with modern intermodal unitised cargo handling, including piggypack loader and 35-tonne gantry cranes.

Five years on, even Chullora is becoming too small for the rapidly-growing business, and plans are being made for major expansion. This will include extending roads to allow loading of longer trains for Superfreighter, as well as more modern handling equipment. The terminal also needs better access to the main south line, which runs nearby but can now be reached only by about 20 minutes of looping around suburban lines.

Superfreighter is also introducing new rolling stock for greater efficiency. It is building 55 low-profile 13.71m (45ft) high speed wagons that will be able to carry overheight containers up to 2.89m (9ft 6in) high compared with the standard 2.74m (9ft). They will carry one 12.18m (40ft) or two heavy 30-tonne 6.09m (20ft) containers.

Low-tare, low-profile, high-speed single-axle wagons are also being developed, especially for carrying up to 32 tonnes of light but bulky "high-cube" freight in 12.18m (40ft) containers.

NSW SRA's first venture into containers with the RACE system in the mid-1970s was not particularly successful because it did not have

Moving containers at State Rail's Chullora goods yard. Computer tracking means that a client anywhere in Australia can be told at any time exactly where his container is on its journey.

enough terminal facilities and failed to overcome traditional railway operating conservatism. Superfreighter service is available to anyone who wants to ship a full container-load (FCL), but RACE excluded forwarders and did all its own freight consolidation. This is an area where railways have difficulty competing with private enterprise.

RACE containers did, however, offer a major advantage that has been adopted by Superfreighter. They were large enough to take two Australian-standard 1 168mm pallets side by side. Standard ISO (International Standards Organisation) shipping containers used by shipping lines are not quite big enough to do this. Although the RACE containers were slightly over dimension, they managed to retain the standard dimensions for container locking points so that they could be carried on any standard truck or train.

The successful principles of Superfreighter are being adapted for a new and more efficient intrastate freight service for New South Wales regional centres. This is called Speedfreight. Special trains of full wagon and container loads will be made up in blocks of wagons that can be progressively dropped off during brief train stops at several major locations in the state.

The highly-disciplined system will replace a lot of ad hoc shunting and train marshalling as wagons move progressively up and down the system, being remarshalled into new trains at several points on their journey.

The Speedfreight service, which is already running to some centres as a trial, will offer next-day or second-day delivery to clients. Like Superfreighter, trains will run to fixed schedules so that clients know when they can expect freight to be delivered.

Country Speedfreight centres will be equipped with modern cargo-handling equipment, including mobile gantry cranes, so that intermodal containers can be rapidly transferred to road contractors for door-to-door delivery. This is to remove the need for large trains to stop frequently at small sidings and remarshall their wagons to pick up small waiting wagons.

"Offering a market-based service like this will mean getting a lot more discipline into our operating systems, but it will be much more cost-effective than traditional services," said Mr O'Rourke.

Speedfreight, which is based on the highly successful British Rail Speedlink, has had a trial service to Moree in the north-west of New South Wales since August 1987, and a service to Griffith, was recently launched.

REBUILT TASRAIL READY FOR ACTION

After a decade of operation within Australian National, AN Tasrail has been overhauled in a bid to secure a competitive place for rail in Tasmania.

From 1976 to 1988, almost $29.3m has been spent on a track rehabilitation program including major re-ballasting, tamping and almost total re-sleepering.

Some 40 per cent of the mainline track has been continuously welded and welding of the rest is being speeded by the introduction in June of a new, purpose-built mobile flash-butt welder, the only one in Australia.

This effort has resulted in a track rated 74 per cent good from a low of around 6 per cent good in 1976.

A program to upgrade bridge carrying capacity and track to allow greater axle-loads, combined with civil engineering projects to improve customer services at major depots and factories, is eliminating barriers to business growth.

Locomotive power has been substantially upgraded to handle longer and heavier trains. Sixteen secondhand 2350 class locomotives were bought from Queensland Railways in 1986-87, and another 25 1320 class and 20 1300 class locomotives have been bought, again from Queensland Railways, for delivery in 1988-89.

To improve operations and reduce maintenance costs, almost the entire wagon fleet has been improved, with particular emphasis on conversion from vacuum brake to air brake and the installation of centre couplers.

More than 400 high-capacity wagons have been imported from AN's mainland system to replace obsolete low-capacity wagons. Modern roller bearing bogies have been progressively fitted to upgraded wagons to further reduce maintenance costs.

All freight services have been rationalised and marketing stepped up. Non-competitive passenger services, which generated huge losses, were discontinued in 1978, followed by LCL traffic in 1986.

Wagonload freight now constitutes 100 per cent of traffic, with the potential to increase backloading of log wagons, container flats and hoppers. Block trains have been introduced where possible with block put-on/put-off further cutting operating costs.

Major operational efficiencies were achieved with the introduction of two-man train crewing. This released staff for other important tasks and allowed the disposal of guards' vans, further reducing maintenance costs and releasing bogies for use under revenue-earning freight wagons.

Support facilities for operations have been improved with the opening of new freight terminals in Launceston and Hobart and new fuelling depots at Railton and

Building a new spur line to service Australian Newsprint Mills at Boyer, Tasmania.

Hobart, and new sanding plants at Launceston and *Hobart*. A one-spot wagon repair depot is being built to minimise out of service time for rollingstock.

Management of operations is being improved with the introduction of TIMS and the installation of a new UHF radio communications network.

The efforts of AN Tasrail's staff to maintain the business growth rate (record tonnages of pine logs, coal, clay and sulphuric acid were hauled this year) have been rewarded by the Minister for Transport and Communications announcement of a five-year extension of AN's Tasrail contract. The Minister suggested that Tasrail could achieve break-even by the end of the contract.

Top: Locomotive ZB16A, one of more than 60 bought from Queensland Railways to strengthen Tasrail.
Left: New log loading area at Conara.
Below: A Tasrail container train heading towards Boyer on the Derwent River.

What if a TV drama had a 4000-tonne five-diesel super-freighter being driven at break-neck speed down a 1 in 45 grade in a desperate attempt to outrace a runaway train behind it? The script would surely be dismissed as fanciful. And what if the death of the hero was attributed to a disregard of safety by the railway management? Would that be pure fiction? Both these things happened only eight years ago on the fabled Union Pacific Railroad. And three men died.

RUNAWAY ON CIMA HILL

FEW GOVERNMENT REPORTS CONTAIN SUCH HAIR-RAISING DRAMA, TRAGEDY AND SENSE OF SHEER WASTE.

David Le Roy Totten was a young Californian engine-driver who worked on the Union Pacific Railroad until 1980 – to be precise, until 14.29 hours Pacific Standard Time on Monday 17 November 1980. David's employer is prominent in the history of the United States of America. David is virtually unknown but he too has his place in railway history.

A great company, a great and proud system, the Union Pacific Railroad is a name known across the world. UP was the railroad famed for opening up the American West, reviled for destroying the prairie buffalo and a complex Indian society. Train enthusiasts know UP of old for having the world's biggest engines, the longest trains, the densest intercity freight traffic. The modern UP is famous for its superb infrastructure, equipment, and management, its marketing, and its profitability in a difficult business. "If only we were as good as UP", Australian managers might well say, "our industry would have it made." And that would be true.

What then if a TV drama or a novel had a 4000-tonne five-diesel superfreighter being driven at breakneck speed down a 1 in 45 grade in a desperate attempt to outrace a runaway train behind it? The script would surely be dismissed as fanciful. And what if the death of the hero was attributed to a disregard of safety by the railway management? Would that be pure fiction?

Both these things happened on the fabled Union Pacific Railroad. They happened only eight years ago, and they killed three men, facts documented by no less an authority than the US Government's National Transportation Safety Board.

Few government reports contain such hair-raising drama, tragedy, and sense of sheer waste.

THE SETTING.

Most mountainous sections of railway are located so the steep grade follows a winding river valley, a staircase of alpine glacial basins, or, as in the Blue Mountains of NSW, a narrow, rising ridge. In such settings, the natural rise sets the overall grade, and the engineering works follow.

More subtle and rare but not less steep is the open desert plain tilted to the horizontal. Although the tilt may be imperceptible to the naked eye, it can be formidably steep for a labouring main-line train. AN's eastern climb up to the Nullarbor is an example – a gentle 1 in 70 rise. The bottom of the Bolan Pass in Baluchistan is another such place, but here Pakistan Railways rise at 1 in 25 grades. Another lies in the Mohave desert, where the Los Angeles-Las Vegas leg of UP's transcontinental main line climbs Cima Hill on an unbroken 1 in 45 for some 30km. The section is in San Bernadino County but is not in the San Bernadino mountains. Cima Hill is in tilted desert, still essentially open country. On Cima Hill the curves are few, the straights up to 5km long.

THE TRAIN.

Five minutes after midnight on Monday 17 November 1980, a 26-car UP freight train arrived at Las Vegas, Nevada. One car was the yellow caboose, one was loaded with beer, and the remaining 25 cars were bulkhead flats from UP's sleeper treatment works at The Dalles, Oregon. Built in 1956 for plasterboard traffic, these sleeper-wagons were 16.3m long with a tare mass of 30.5t. Heavy? Yes, these flats had cast steel underframes that alone weighed nearly 16t, bolt-on cast steel end bulkheads, and extra side framing to constrain the transversely-loaded sleepers.

Twenty of the wagons carried main track sleepers 2.7m long and five carried short 2.4m siding-track sleepers, the latter cars being mixed in the train. The main track sleepers were urgently needed at Yermo, California. So by 07.45 the night shift had removed the beer car, added another caboose and assembled a 21-car train headed by No 3119, a single EMD-GM Model SD-40 diesel of 3300hp.

Due to a mix up with numbers in the dark, however, the five cars with siding sleepers were coupled in the rake. Getting the people, locating the right cars, and unscrambling the muddle took some time. But the staff were lashed by an angry yardmaster. The perway special was remarshalled, given its pre-trip train examination, and brake-tested for continuity and leakage rate by 09.42.

It was fine autumn high-country weather in Vegas and to the west, with near perfect visibility, 17 deg C and a light wind. At 10.00 precisely, the perway special, now designated by its UP engine number as Extra 3119,

pulled out of Las Vegas yard bound for Yermo, 275km to the west. On board were nearly 11 000 sleepers and a youthful four-man crew. Engineer (driver) David Totten was the oldest at 31, accompanied on the footplate by the youngest, head brakeman Wallace Dastrup, 22. In the caboose, conductor David Branson, 26, was in charge of the train, with rear brakeman Thomas Faucett, age 30.

NOT WORKING. On this perfect late-autumn morning, the compact little train of heavily-laden cars climbed the long 32km rise to Erie, Nevada, holding a bit over 30km/h on the 1 in 100 climb.

The special then dropped down an undulating descent to Borax, Nevada. The speed limit for the special was 80km/h, but it briefly reached 90km/h after David Totten found that 3119's dynamic brake was not working. As required by the UP rules, he radioed this to the despatcher (train controller) at the Salt Lake City Control Office. While he was able to control the train on the 1 in 100, it was clear to David that they would have to set the grade control valves (retainers) before he could bring the train down the long 1 in 45 Cima Hill on air brakes alone.

After Borax, the train settled into another long, steady uphill slog at 32km/h across the state line into California and up the 1 in 100 into Cima, the summit station. Extra 3119 arrived at Cima and swung right on to the northbound loop track at 13.29, having averaged around 40km/h for the first part of the trip.

While the SD-40 ticked over up front, Dave Branson and Tom Faucett moved forward along each side of the train, setting grade control valves. They met Wally Dastrup, who was walking backwards from the engine, doing the same.

Branson and Faucett heard no air leaks, and they reported no defects. While events were to show that their examination could only have been perfunctory, there was no special reason why it should not have been. The car department in Las Vegas had examined and passed their train, and the upward chain of responsibility was train examiners, yardmasters, operations management. Train inspection wasn't the train crew's job.

Twenty minutes behind Extra 3119, a long train of loaded grain hoppers had pulled out the Las Vegas Yard. It had 73 cars and was pulled by a string of SD-40s. Extra 3135 followed the perway special westward across the desert at its regulation 80km/h, down and up the 1 in 100 banks and at 13.35 took the loop points at Cima, swinging left on to the northern loop track. Then, like the crew of Extra 3119, the grain train's crew moved down their long train setting the grade control valves.

THIRD TRAIN. At 12.05, a third westbound train had also clattered out of the Las Vegas yards on to the UP main line, heading for LA. But extra 8044 was a very different train from the perway special and the grain train.

Extra 4044 had rolled in from the East on a priority schedule with 50 on: 49 loaded, extra-length 25m piggyback and automobile cars and a caboose. A long, tall, high-windage train, Extra 8044 represented a solid block of profitable cargo wrestled by UP's marketing department from the trucking competition.

With some $8m worth of cargo aboard, nothing was allowed to delay trains like this. So five GM diesel units had been coupled on to crack this freighter over the 1 in 100 grades. And the leading unit was the biggest diesel in the world – a 6600 hp, 8-axle Centennial class engine. EMD model DD40X was a 1967 design, custom-built for the UP's transcontinental fast freight run, a twin- V16 engined Do-Do monster weighing nearly 248 tonnes. Compared with the 6946, the other four units on the fast freighter were mere babies: 6-axle SD-40s, Co-Co, 3300 hp, 177t each, single V16, brothers under the bonnet of V/Line's lighter G Class and Westrail's L Class Clydes. Except for the Centennials, this division was an SD-40 railway.

So with the line cleared for it, with nearly 952t and 20 000 hp locomotives available for 3290t of train, and with fuel pouring into cylinders at the rate of a garden hose, Extra 8044 found no problem in maintaining a cracking 77km/h average from Las Vegas up to the summit at Cima – despite two climbs totalling 68km of rising 1 in a 100.

Approaching the occupied Cima loops, the locos were throttled back, but 8440 did not need to stop. The crews exchanged waves as an unending string of long, high cars banged and rang their way through Cima at 20km/h on the main track

THE TWO MEN HEARD NO AIR LEAKS, AND THEY REPORTED NO DEFECTS. INSPECTION WASN'T THEIR JOB.

between the two standing westbound trains. The track circuits wired the event back to the CTC machine at Salt Lake City, which timed it at 13.46. But this fast freight was nearly 1.5km long; it took over four minutes to roll through the lonely little summit station.

Then with the long, mostly straight 1 in 45 descent before him, the driver set the power control on the Centennial on DYNAMIC, and step by step notched the five big yellow locomotives up to full notch-8 retardation.

The 32 traction motors dug the wheels in, checking the downhill surge of the train; the driver applied the air brakes carefully. With engines in fast idle, the dynamic brake fans howling at full revs, and 400 brake blocks clamped firmly against 400 wheels, Extra 3044 stabilised at exactly the regulation 40km/h and the freighter's crew settled back in their seats for a steady, uneventful 30km run, a 633m drop down Cima Hill. They would pass the unoccupied Chase, Elora, Dawes, and Hayden loops before reaching Kelso, California, where the 1 in 45 ends and the grade eases to a continuing descent at 1 in 100.

The points were aligned from Salt Lake, the perway special was cleared by radio as next in the queue, and ten minutes later the signal block changed from red to yellow. David Totten realeased the independent brake and gently powered-up his SD-40, notch by notch, looking back, easing the 21-car train on to the main line. Then he throttled back as the cars coasted over the loop points.

GOING DOWN. At 13.59, the yellow caboose clattered clear of the Cima loop at 27km/h and the train began its descent of the 1 in 45. But unlike the 8044 ahead, its dynamic brake fans were not howling. On Engine 3119 David Totten had to bring his train down in exactly the same way as a steam driver would have done 70 years earlier.

Ten minutes later again, at 14.09, the bulk grain train followed. But it plays no real part in this story.

After Branson's caboose cleared the loop points, David Totten braked his train down from 27 to about 21km/h. Obedient, the train slowed – but then it reaccelerated to 26km/h. Two more full-service brake applications were made, but the 1 in 45 was starting to take command of the train. Sensing trouble, David Totten radioed the Salt Lake City despatcher: "I keep setting air, and it won't slow down".

What could be wrong? They had brake continuity. They had set the grade control valves. They were following their instructions and training. Yet speed was gently rising.

At 14.13, it was 31.4km/h and accelerating at 2.6km/h every minute. David radioed that he now had 210 kPa of air in the loco brake cylinders. Back in the caboose, Branson, the 26-year-old conductor, heard this, and opened his emergency brake valve; he said nothing on the radio. The despatcher heard David's radio message but he did and said nothing.

Just two minutes later, at 14.15, several things happened simultaneously.

The following grain train's engine crew noted that the block signals at Chase, the next crossing loop down the hill, changed rather rapidly from red to yellow, then green. And the perway special 4.7km ahead of them, seem to be smoking rather heavily.

Branson and Faucett were making a futile attempt to uncouple their caboose. Their train, which had stabilised briefly at 32km/h, had started to reaccelerate at the high rate of 8km/h per minute after Branson pulled the air from the rear.

The train had already run 8km of unbroken and mostly straight 1 in 45.

David Totten had again radioed Salt Lake reporting a full service application, 40km/h speed, and a train that was still accelerating. The CTC board now showed the train had clattered past the unattended Elora loop, so the despatcher asked David whether he planned to stop at Dawes to cool the brakes.

David replied that he didn't think he'd be able to stop.

The despatcher said and did nothing. He did not set the CTC to sidetrack the express freighter further down the hill, and give the perway special a clear track.

He did not slow the express freighter so that rear-end crew could bale out safely, set the points to derail the perway special at a still (relatively) low speed. In short, that despatcher failed totally to ask the right questions, to use his head, and to react.

RUNAWAY TRAIN. But the driver of the express freighter ahead certainly reacted to the radioed exchanges, for the tempo of action was rising on Cima Hill. He realised that just 8km behind him there was a now runaway train doing – at 14.17 – 63km/h, when he was holding the regulation 40 and still in full dynamic braking. He released his superfreighter's air brakes, eased the dynamic brake back to "idle", and radioed Salt Lake for permission to exceed the speed limit. It was granted.

So he set POWER and punched the throttle open.

With five diesels in notch 8 unleashing 19 8000 hp pulling, the 50-car freighter unbunched its coupler slack and surged down the 1 and 45. By 14.21, the 4000t automobile train was running at 105km/h. But the runaway, too, had gathered speed and with virtually no retardation, it was now accelerating at nearly 14km/h per minute.

David Totten sat in his cab broadcasting his rising indicated speed: 100– 110– 120–130 kilometres an hour. Behind him, the old three-piece bogies under the flat cars kicked and bucked and bounced at way above their critical speeds. Regrettably, UP's superb track kept them on the rails. And not at 130km/h – for *that* was only the indicated speed. The speedometer on the SD-40 didn't read or record anything higher, even though the perway special was by then running very much faster than 130.

Two trains with total masses of over 6000t were racing towards Kelso down the 1 in 45. Near the bottom of the hill, Extra 8044 was galloping for its life, full-tilt at 121km/h, her diesels flat out, her crew now becoming confident they could outrun the runaway.

It was then that the overspeed trip on the big Centennial operated, knocking out traction power.

The engines wound back to idle; 50 angry wagons surged in against the locomotives; somehow the driver forestalled a penalty brake application. His mate broke into the speed recorder instrument, desperately forcing its needle back so that traction power could be restored. The speed had dropped to 110km/h before they got their locomotives back on to power, and wound up to notch 8 again. But the check had probably saved their lives; investigators found that the big DD-40X with its 8-wheel bogies would probably not have taken

he approach curve much faster than 110km/h.

Thus did everyone stay on the rails, all the way down Cima Hill.

With a clear, straight road ahead the express freighter thundered off the 1 in 45 and through Kelso yard on maximum throttle and doing 110km/h. Then it was on to the 1 in 100 – still descending, still accelerating. Four kilometres west of Kelso, the automobile train was back to 120km/h. Faster, ever faster, it went, still on notch 8 – for its crew knew that behind them was David Totten's runaway sleeper. *And that was still accelerating, too.*

The runaway rocketed through Kelso with the SD-40 on red hot wheels, past the horrified crew of a freight train that had been sidetracked and was waiting to climb the big hill, with the old flatcars still on the rails at an unbelievable 177km/h. The waiting railwaymen had heard David Totten's warning on the radio, heard the 3119's warning horn.

They were the last people to see David Totten alive – seated in his cab, microphone in hand, broadcasting his indicated speed of 130km/h and a calm estimate of the narrowing distance to the caboose of the automobile special clearly visible ahead.

THE COLLISION. At 14.29, just 30 min and 37km after it had left Cima summit, the runaway train finally overtook the speeding express freighter. Both trains were running on dead straight track, still dropping at 1 in 100. The automobile freighter was running at 135km/h when they hit. And hotbox detector records confirmed that the runaway was doing around 118 miles an hour – *an incredible 190km/h.*

A series of four cataclysmic, multiple-impact rolling collisions followed. The express freighter's caboose was instantly lifted, derailed, uncoupled and thrown clear to the left, fatally injuring the conductor and badly injuring the rear brakeman.

The air hose opened, the express freighter went into emergency braking as David's perway train smashed in the coupler slack at the train's rear and savaged, in rapid succession, three tri-level automobile cars. In this grinding maelstrom of flying steel the automobile car structures held, and they too, were thrown clear. But the superstructure of UP loco 3119 did not: except for the diesel engine, it was wholly demolished.

THEY WERE THE LAST ONES TO SEE DAVID TOTTEN ALIVE — SEATED IN HIS CAB, MICROPHONE IN HAND, BROADCASTING HIS INDICATED SPEED OF 130 KM/H AND A CALM ESTIMATE OF THE DISTANCE TO THE SPECIAL AHEAD.

The rails then spread under the headless perway train, and in a few terrifying seconds of dust and thunder in the desert, all 20 bulkhead flatcars derailed, uncoupled and dug in. They ejected 11 000 sleepers into the desert, sideways and forwards at 180km/h, scattering them like broken matchsticks amid indestructible General Steels underframes and a scrapyard of wheelsets, couplers and bogie components. Ahead of this, the wrecked SD-40 ran on for nearly 700 metres before it too stopped, upright, in line with the roadbed, and reduced to scrap metal.

This terrible collision was reconstructed by NTSB investigators, who established that David Totten and Wally Dastrup were killed instantly, still at their posts when the third-last auto rack car finally demolished their locomotive. But for at least 10 minutes the men must have known that they faced almost certain death. Branson and Faucett were derailed but survived.

David Totten had been in Union Pacific's service for six years. He had joined as a shunter, and passed his driver training course with a final score of 96 per cent. He was described as "a very apt student", "very capable". After an experience period in which he was recorded as meticulous in following rules, he had been driving the big yellow diesels for 22 months when he was killed. He comes through the cold prose of the official US Government report on the Kelso wreck as a dedicated railwayman, and a fine product of the company's recruitment and training program. On the material side, the bill was one SD-40, 20 old wagons and four newer ones, plus track damage and service disruption: a modest $US1.2m bill in all. And no doubt some Californians had to wait a while for Detroit to make them another new car.

INVESTIGATION. But how, the industry asked, could such an unthinkable runaway occur on a modern railroad like the Union Pacific?

The task of answering this fell to four people – the National Transportation Safety Board's vice-chairman Elwood Driver, Messrs Francis McAdams and Patrick Bursley, and Ms Patricia Goldman.

They flew from Washington, examined the wreck, and took testimony from witnesses. They did tests. They called for laboratory analysis of wreckage. They took their time – nine months – to do the job thoroughly, because their 70-page report would reveal a shocking state of affairs and attitudes on the Union Pacific Railroad.

There had originally been 55 vehicles in the UP's 1956 model F-70-1 class flatcar fleet. Twenty of the survivors were pulled out of sleeper-distribution service for brake tests, and assembled in Las Vegas yard to replicate the wrecked special. Six had wholly ineffective brakes when presented for test and 10 had only partially effective brakes, largely due to maladjusted cylinder travel. The NTSB felt this indicated the likely condition of the brake equipment on the 20 identical flatcars that had been wrecked.

It took UP's car department at Las Vegas more than two days to fix them and achieve a testable train; fifteen minutes, not two days, had been allowed for the examination of David Totten's train.

Inspection of the wreck had shown that four of its 20 wagons had their brakes cut out at the branch cock – an automatic loss of nearly 20 per cent in wagon brake power. The wagon wheelsets recovered showed relatively little heat damage and the recovered brake blocks were no more than half worn. Yet David Totten's locomotive had no brake shoes left at all, and its wheel rims had burned blue with the heat of a full-service application at 190km/h. So the NTSB wasn't in much doubt about the condition of the air brake equipment on Union Pacific's Maintenance of Way Dept wagons.

Then there was the question of actual train weight. The wagons had been carded by the UP sleeper-treatment plant with a "standard and nominal" load of 27.2t (60,000 pounds) per car, so the young crew had left Las Vegas believing their train weighed 1290t. Analysis and weighing showed that the payload was more than double that carded. The actual trailing load was in fact over 1800t. Loaded, the wagons had a braking ratio of under 15 per cent – this with fade-prone phosphorus-iron blocks, and on a 1 in 45 grade.

INSPECTION. The brakes had been inadequately inspected before the train left Las Vegas, by one man and not two (the norm). The imposed limit of 15 minutes was not an aberration but standard practice, for written instructions had been issued that brake inspections should take no longer than this, regardless of train size, the amount of examination and rectification work needed, or the number of people available to do it. The trains had to be cracked through. There was definite evidence that the yard superintendent had hustled the brake inspection and the despatch of the ill-fated perway train.

On 2 January 1980, the superintendent of the UP's California Division had issued orders that diesel units were not to be despatched from mechanical points (of which Las Vegas was one) without functional speed recorders, recorder tapes *and dynamic brakes* on the lead unit. After only seven months, this same official cancelled his order without explanation.

That was on 12 August; the special crashed only three months later, and the NTSB could find no explanation of the circumstances. UP's executives were not talking.

A dynamic brake is just that – dynamic. A driver cannot test it standing still, but only on the road, when it either brakes the train or it doesn't. And when David had tested the dynamic on 3119 between Las Vegas and Cima, he had found it ineffective. He had radioed this to the despatcher, following rules. But the despatcher had done nothing. He had not, for example, ordered the exchange of 3119 for an identical SD-40 from the multi-unit grain train lashup also waiting at Cima Summit – not in view of the priorities indicated in the superintendent's order.

By this sad chain of events, David Totten was put in the situation of having to bring a string of heavy, under-braked cars down 31km of 1 in 45 grade behind one locomotive without dynamic brakes. He had air brakes and grade control valves (retainers) alone. Those brakes had little enough margin at the best of times, and they were terribly defective.

LAXER RULES. But every railway has rules that are supposed to prevent situations like this. What did the Union Pacific's air brake rules say? Their first paragraph claimed that they complied with the relevant AAR Interchange rules and Federal regulations for air brake operation.

The Federal investigators established that UP's rules for mountain working were laxer than those of other major railroads operating on comparable grades, laxer than the recommended practice of industry's Air Brake Association, and simply did not comply with Federal Railway Administration requirments, which happened to be the law.

When the investigators ran the replica test train, it was shown that a very experienced driver could bring the train, with operative air brakes, safely down the 1 in 45 of Cima Hill with grade control valves alone. But the emphasis was on "very experienced", for a driver had been brought out of retirement for the test. And nobody dared touch the caboose emergency valve to fully replicate the circumstances of the runaway – not even on a train with air brakes that worked, not even with a cleared road ahead, not even on a loco with unused dynamic in reserve.

Air brake training up to this level of train handling had not, the NTSB found, been given to David Totten. And conductor David Branson had received no instruction on air brakes that would be of any use to him in the management of a train like Extra 3119 on a mountain grade like Cima Hill – even though working over this mountain grade was normal.

A background to the case, not given in the report, was the Union Pacific Railroad's continuing drive to increase operating productivity, reduce manning and eliminate wasteful featherbedding. All this had been bitterly resisted by the unions, with the Federal Railroad Administration field inspectors stuck in the middle, with rules and regulations that most people seem to have ignored.

Management might well have claimed that as technology leaders, using modern cars with modern air brake equipment, trip inspections every 800km were not justified at all. Or that even if they were, continuity and leakage tests coupled with a quick visual check by teams of examiners on golf buggies carrying repair materials were perfectly adequate.

But the runaway train at Kelso was not modern. It was a string of uniformly old company wagons in

non-interchange service. And Las Vegas was the last train examination point before a mountain descent – a descent almost as steep as that from the Blue Mountains of NSW.

But given UP's record of runaways, the company view cut no ice with the NTSB.

UP'S RECORD. A record of runaways? On the Union Pacific? Yes. In criticising the UP management, the NTSB cited four other accidents in only two years, 1979 and 1980, in support of its devastating statement that "runaway and the difficult-to-control trains have become a problem relatively unique to the UP in the past few years."

One case was at Granite, Wyoming, just 16 months before Kelso. A bulk grain freighter comprising three SD-40-2 diesels, 81 bogie covered hopper wagons and a caboose – 82 on for 8750t – had run away on the famous Sherman Hill and crashed at 120km/h.

This destroyed two late-model diesels and all the grain cars, most of them brand new, in a $5m pile of wreckage just one-sixth of the train's previous length. The lead diesel ran ahead for five more kilometres before it was stopped. And the wreck brought down an overbridge on Interstate Highway 80, thus ensuring maximum publicity. Miraculously, nobody was hurt. The cost should have excited serious management attention, but it seems not to have.

In all, 28 findings covered three pages of the Kelso report. The 28th was that "the Federal Railroad Administration is not adequately enforcing the Federal Power Brake Law on the Union Pacific Railroad".

There is a footnote to this accident, and it is perhaps the most terrible indictment of all. The NTSB reported that even after the Kelso wreck, UP trains had continued to be operated over the California Division without proper inspection. In fact just three months after Kelso, a trainmaster, acting under orders from an assistant superintendent, ordered a crew to take their train from Yermo to Las Vegas, up the Cima Hill, *despite defective brakes and under threat of dismissal.* The union complained and the NTSB investigated. The Feds verified the complaint.

And this in 1980, not 1880.

It is, however, possible to track some revealing management changes after 1981. One former senior operations executive now appears to be allocating wagons. So in 1988, this great American railroad is once again under a management with a more enlightened attitude to safety.

THE LESSONS. What are the lessons from Kelso and the unhappy Union Pacific of eight years ago for Australia? We have similar and even steeper grades than the Sherman and Cima hills. We have had freight train runaways. We use very similar models of diesel-electric locomotive, equipped with basically the same WABCO 26L air brake outfit. And although (the Pilbara excepted) our freight wagon brakes are Australian-developed and different from the American AB and ABW systems, they are functionally similar: single-pipe, direct-release, automatic air brakes with retainers (grade control valves) for retarded release.

The first key difference is maintenance: no Australian railway would dare to skimp on essential air brake maintenance. A car might slip through the net occasionally, but never a complete train, let alone a fleet. And there are a number of other important technical differences.

☐ Almost all heavy-load wagons in Australia today have empty/load brake control gear, to augment the braking effort and compensate for the extra mass of a loaded car. David Totten's train didn't. Some very old Australian equipment doesn't, either.

☐ All new Australian freight wagons today have fully rubber-seated air brake distributor valves, which leak off far more slowly than the old metal-seated valves on the Kelso cars. But some old cars here still have metal-seated triple valves. They include some vintage tourist equipment.

☐ Most Australian wagons have automatic slack adjusters to take up and correct for block wear, and thus keep piston travel at the desired 100mm maximum. The NTSB report suggests that Totten's wagons did not.

☐ Almost all Australian wagons today use non-metallic brake shoes. These wear more slowly and give near-constant friction. At high speed, they have only a fraction of the fade of David Totten's cast-iron blocks.

☐ UP engine 3119 was unusual, by our standard, in its not being fitted with a brake pipe flowmeter. Almost all Australian diesels are thus

THERE IS A FOOTNOTE TO THIS ACCIDENT, AND IT IS PERHAPS THE MOST TERRIBLE INDICTMENT OF ALL.

equipped, and they have been for more than 20 years. A flowmeter is a cheap, simple device – a two-needle pressure gauge tapped across a venturi fitting in the feed to the brake pipe. It is a valuable aid, showing not only that there is pressure at the front-end of the train brake pipe but, by indicating how fast the air is rushing into that pipe, whether or not the pipe is open. This identifies situations that call for particular brake-handling responses by the driver.

These differences did not just happen. They were the result of decisions to equip the railways safely.

The air brake rules of Australian railways are tough, and they are enforced. The training is good, and most systems have a Westinghouse brake engineer and technical staff dedicated to the subject. And while the industrial structure of our government rail systems and the power of the unions are often criticised, one thing is sure: no Australian railway manager would dare to order his people to shortcut safety rules under penalty of dismissal.

DOOMED TRAIN. The technical circumstances of David Totten's near-total brake failure are complex. In essence, the unexamined, over-stroke brake cylinders on the perway cars meant low cylinder pressures after the check application at the top of the hill. The retainers (grade control valves) were unable to hold effective cylinder pressure after two service re-applications, and the pressure-maintaining feature of the 26L equipment on the one engine could not compensate. Once the conductor's valve was opened, the train was doomed, for with no flowmeter to guide him and inadequate training, David Totten was unable to take the only step that *might* just – only just – have saved the train.

For given no dynamic brake on the engine, low braking ratio, cast-iron blocks vulnerable to high speed fade, and, above all, cut-out cars and maladjusted equipment, that train was all but doomed before it set out from Las Vegas.

The UP arrangements made this adverse technical combination routinely probable; the same combination is just – barely just – conceivable in this country, but only given an exceptional combination of deferred maintenance, short cuts, sloppy marshalling, very inept brake handling, breaking of rules and sheer bad luck.

In reviewing the technical elements of the Kelso wreck, one is reminded not so much of recent accidents but of the classic train runaways of half a century ago. Substitute David Totten's SD-40 for an old steam engine, and you have all the stuff of early-1930s railroading: heavy cast-steel frame flatcars, plain journal bearings, metal-seated AB triple valves, and the neglected maintenance of desperate times in the Great Depression.

All that radios and CTC and speed recorders did 50 years later was to tell more people what was happening, to raise the speed (and severity) of the final crash, and to better record the circumstances. The humans failed to use these modern tools to mitigate the results of the runaway. And, in Australian terms, the Traffic was every bit as much to blame as the Loco.

So Kelso was a "human", rather than a "technical" accident, meaning that there must be lessons for other humans. They are these.

SAFETY FIRST. Every railwayman on the ground could usefully ponder David Totten's story when he or she waves to the enginemen who are bringing their 3000 tonnes of train down from Katoomba, or Mount Lofty, or Ingliston, or down the Toowoomba or Kuranda ranges. When radios crackle or lights wink in a CTC office and people monitor these movements, they should *think,* and think safety.

If it is our job to maintain and test brakes, to marshall and examine trains, to set grade control valves, or to bring these trains down the mountains, we should be not careful. We should be meticulous – always.

We should never cry wolf, or close our eyes to, or misuse for purposes of advantage or leverage, a matter that significantly affects safety, no matter on which side of the industrial-relations fence we sit.

And if all of us are always just that little bit more thoughtful about what we do, what we direct, what we pass on as instruction to the next generation, then our trains will continue to be brought down these formidable grades. The dynamic fans will howl, and the air will slowly hiss from retainers, and there will be no need for young Australians to die as David Totten and Wally Dastrup died, so bravely, so unnecessarily, at the bottom of Cima Hill in the lonely Mohave Desert on 17 November 1980.

THE RAILWAYMEN FAILED TO USE THEIR MODERN TOOLS TO MITIGATE THE RESULT OF THE RUNAWAY. KELSO WAS A HUMAN ACCIDENT.

CONTAINER WASHER CAN KEEP THE TRAINS SPOTLESS

An economical machine devised by a freight forwarder for quickly washing the outside of his rail freight containers has found another use on the railways: washing locomotives and rollingstock for Australian National at Port Augusta.

Arthur Crowhurst of Crowhurst Fruits Pty Ltd designed the machine to save him back-breaking hours of cleaning at his depot in AN's Islington Freight Centre.

The machine is mounted on a forklift. It uses rotating polyethylene brushes and water mixed with detergent to remove dust, grit, and grime from trucks.

Crowhurst Fruits, the fourth-largest freight forwarder on the Adelaide-Northern Territory rail line, specialises in food transport. The firm offers a freight forwarding service for frozen, refrigerated, and dry bulk produce geared to the needs of smaller supermarkets.

Mr Crowhurst saw the need for a more efficient container washer when he realised it took him more than three hours to do the job by hand. "Cleanliness reflects on our business, and we wash the outsides and steam clean the insides of our containers after every trip," he said.

He invited five cleaning-equipment suppliers to demonstrate systems including steam, high pressure water, and detergent, but found none satisfactory. Some stripped off the paint; others removed the grit but didn't restore the shine. So he designed his own.

The rotating polyethylene brushes, water tank, and hydraulic motor are mounted on a base for easy lifting by a forklift. In just a few seconds, a securing pin is attached, two hydraulic hoses are connected, and the washer is ready for action.

The washer is simply driven steadily backwards and forwards along the vehicle or container, raised or lowered by the forklift to reach the full height of the container or truck body.

One tankful of water is enough for about four 12m (40ft) containers. Washing time is less thasn 15 minutes per container, and is a safe, easy task compared with the back-breaking broom washing once necessary.

The prototype was proven in service over two years at Islington. Patents are now pending in Australia, Japan, the USA, Canada, and several European countries. Arthur Crowhurst has entered into a manufacturing agreement with a local subsidiary of an American company to build and market the washer.

The production version, called the Brudi Rotowash, is being manufactured by Brudi GRW, an Adelaide-based engineering and manufacturing company specialising in forklift attachments.

One use Arthur Crowhurst hadn't envisaged was cleaning locomotives. A demonstration at Islington Workshops on a grimy diesel and

Australian National 930 class locomotive gets a scrubbing with a forklift-mounted Brudi Rotowash.

other rollingstock proved the effectiveness of the Rotowash in removing not only dust and mud, but also diesel exhaust grime and oil, however. The ability of the Rotowash to tilt hydraulically and lock into any angle enabled it easily to reach the roofs of locomotives and carriages, as well as the sides and sloping cab fronts.

The first Rotowash is in use at Port Augusta, where instead of trains going to the washer, the washer is driven to the trains.

The Rotowash promises to be an economical and effective way of washing rollingstock at smaller depots where the construction of a permanent washing plant cannot be justified.

For further information contact Mr Peter Beaumont, managing director, Brudi GRW, 303-305 Hanson Road, Wingfield, South Australia, 5013 (telephone (08) 268 4111).

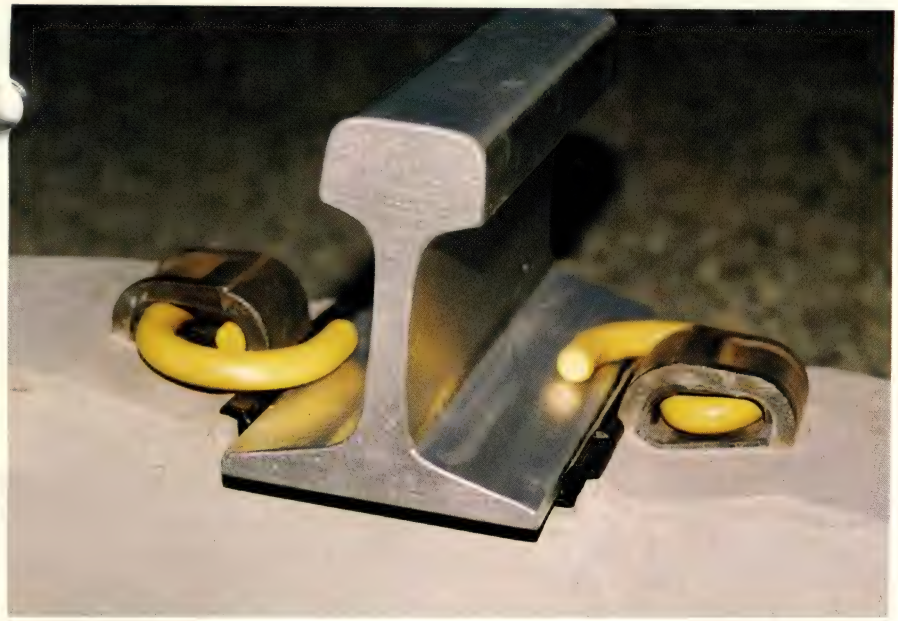
NEW RAIL FASTENING SYSTEM DEVELOPED

A new progressive resilient rail fastening system known as Pandrol Sonata has been developed by Pandrol Australia Pty Ltd in Blacktown, Sydney. The system is the result of two-and-a-half years of research and development, and is based entirely on Australian invention and design.

The company has manufactured and serviced specialised rail fastenings for more than 40 years, and its engineers have substantial international railway experience. This background has enabled them to provide a new system with the requirements for building and operating superior railways in the 21st century.

The Pandrol Sonata rail fastening has reached the testing stage, and is being incorporated in prototype concrete sleepers. Service testing in mainline track will soon give railway engineers the chance to evaluate the product.

The Pandrol Sonata system for concrete sleepers has four simple flat coil spring clips. Two shaped rail pads fit into recessed rail seats as an interface between concrete and rail foot, and electrical insulation. The clips are secured in four metal shoulders and are electrically insulated by plastic insulators in the shoulders. Incorporating the insulators in the shoulders protects them from service and environmental damage. The shoulder and insulator



Pandrol Sonata rail fastening system for concrete sleepers minimises and mechanises fitting.

become part of the sleeper at manufacture. Track assembly is simplified by securing the rail pads on the sleepers before installation. All that remains to complete track assembly is the driving of the four Sonata rail clips. This can be done with simple hand tools.

Two shoulder types have been developed, one of pressed steel and one of cast malleable SG iron. All other components are of common design and application.

The encapsulated Sonata insulators remain firmly held in the shoulders at all times, obviating the need for accurate separate fitting and potential loss in service, and giving long life. The insulators can be replaced by hand or mechanically with standard Pandriver equipment.

The simplicity of the system minimises and mechanises fitting, using existing Pandrol machines.

Automatic equipment is being developed. The clip has high fatigue life expectancy because of its simple contours, low spring rate, and large static and dynamic deflections. Clips can also be driven bi- directionally. The recessed rail seat gives maximum lateral rail restraint and anti-sleeper skew.

Rail pads of different materials and thicknesses are also catered for. The assembly has a low profile, minimising susceptibility to damage from dragging equipment and track machines.

The Pandrol Sonata system aims to reduce initial and operating costs for its end users, and promises to provide a very cost-effective system indeed.

DL 26, the first locomotive of its class, tested and ready for delivery from Clyde Engineering.

LOCOMOTIVE TESTIMONY TO LOCAL EXPERTISE

The most modern diesel-electric locomotive in Australia, the DL class locomotive designed and constructed by Clyde Engineering for Australian National, has had its first units tested and put into service, with a production schedule for a total of 15.

The DL class uses sophisticated microprocessor and super series wheel creep control systems developed by General Motors' Electro Motive Division. It provides a powerful, efficient package with a capacity equal to that of the most powerful locomotives in general service in Australia. Two identical microprocessor-based control systems monitor the operation of the engine and traction motors, while a third continually monitors and records all operations within the locomotive.

When there is a breakdown, this computer is able to diagnose the fault and, usually, give the remedy. The diagnostic computer stores the operating status of all systems at the moment of failure. This greatly reduces the time it takes to identify the reasons for breakdowns, and in many cases makes repairs possible in the field.

To meet the requirements of Australian National, Clyde engineers incorporated the new EMD 710G diesel engine, generator, and control systems in a frame and body designed in Australia. The locomotives use Clyde's locally developed three-point bogie suspension, and the tri-axle bogie with the D87 roller-bearing suspension traction motors is built at Clyde's Bathurst plant. The locomotive uses a custom-designed cab isolated from the rest of the body and frame to comply with local requirements on noise levels and operator comfort.

The tri-mount bogie design simplifies the mounting of drive bogies, giving increased tractive efficiency and a lighter frame.

The innovative combination of Australian and American technology has produced a unique locomotive design. Its efficiency is such that a 12-cylinder DL has the same haulage capacity as existing 16-cylinder designs (81 Class NSW, BL Class ANR, G Class V/Line).

COMPUTER SOFTWARE TO HELP RAILWAYS

A set of integrated computer programmes to help large engineering organisations plan, measure, and control their work is being used to process information for Australian railways.

The Mincom Information Software System (MIMS), developed by the Mincom Software of Brisbane, can be used for:

- Operating and downtime data, e.g. kilometres travelled, stoppages for mechanical reasons.
- Fuel and oil consumption costs and comparisons.
- Material purchasing, inventory and parts use planning, including period contracts.
- Maintenance scheduling according to operating data and the backlog of other work.
- Work and fault recording for planning and historical analysis.
- Project planning and control, including commitment accounting.
- General ledger, budgeting, reporting, and modelling.
- Indexing of drawing and other reference documents.
- Recording and monitoring equipment condition data such as oil samples and wheel wear.
- Lifecycle tracing of significant equipment components like traction motors.

MIMS can help answer a range of day-to-day questions. Before beginning a loco service, the system can be checked for any records of minor problems at other inspection locations. Workshop managers can regularly review job costs and progress. Planners have direct access to provisioning data for their own stock and purchased items. Project managers can better service their users without increasing holding costs. Maintenance managers can review costs and performance data against period cost and work budgets. Component changeout requirements can be predicted in relation to current measures and operating data.

WINDOW SEAT

A NEW LIFE BEGINS FOR THE OLD GHAN

One of Australia's best-known and best-loved trains, the Old Ghan, makes a nostalgic return to the rails near Alice Springs this year. The official opening in October of the Ghan Preservation Society's museum and tourist complex near Alice Springs will begin a new life for the train.

From her new home at McDonnell Siding on the southern side of Alice, the Old Ghan will make daily runs along 30km of restored narrow-gauge line to Ewaninga Siding.

Those trips will be the result of more that eight years of hard work by members of the Ghan Preservation Society who fought to save the line as a tribute to the early pioneers and as a tourist attraction. With an $800 000 bicentennial grant, the help of local businesses, and more that 100 000 hours of voluntary labour, the society has saved a unique part of Australia's history.

The restoration of the railway line and the Old Ghan and other historic rollingstock was the largest community project undertaken in the Northern Territory, and possibly Australia, said society president and local MLA Roger Vale.

The project also included the restoration as an operating service of 26km of overland telegraph line between the two sidings. The line was completed in 1872 by Sir Charles Todd.

"The whole project has been valued at $7 million, and local business have donated the equivalent of $4 million in materials and equipment," Mr Vale said.

Work did not end with restoring the line and railway equipment. A large station building, storage sheds, car-parks, and tourist facilities have been built on the McDonnell Siding site as well.

Lysaght Building Industries in Alice Springs supplied steel roofing and cladding for the rollingstock sheds, station building, and carpark fencing.

Roger Vale, president of the Ghan Preservation Society, outside the restored Stuart railway station.

"We've named the station Stuart because that's what Alice Springs was called in 1929 when the first train arrived," said Mr Vale.

"The station is an exact copy of the building designed for Alice Springs but never built because of the Depression. We managed to find the architect's designs in Adelaide and have copied them faithfully."

When the complex is officially opened in October, the station will house a railway museum, tearooms, and a ticket office for trips on the Old Ghan.

Dinner excursions in the restored dining cars and bush picnic rides to Ewaninga Siding, 30km south down the line, are expected to be popular with railway buffs and patrons of the Old Ghan.

The Old Ghan was replaced in 1980 by the New Ghan operating on a new line following a safer route. The Old Ghan train travelled north from Adelaide on a low-lying line often flooded or washed away by heavy rains.

"It was infamous for never arriving on time," Mr Vale said. "People still talk about the one time she arrived at the right hour and the right day. The problem was that it was the wrong month; the track washed out and she came in three months late."

Your fixed overheads are our business.

Installation and maintenance of overhead wiring are big factors in railway system running costs.

Plasser have designed and built a radically new range of special purpose vehicles to do these jobs more safely, efficiently and economically.

If you'd like to see your costs come down while your overhead wiring goes up, ask Plasser for further details.

Plasser Australia

HELPING ADVANCE AUSTRALIA'S RAILWAYS

2 Plasser Crescent, St. Marys N.S.W.
P.O. Box 537, St. Marys N.S.W. 2760
Phone (02) 623 9033 • Telex AA24140 • FaX 623 6502

PA201

Skitube rack rail train takes skiers from the Bullocks Flat terminal, 20km from Jindabyne, NSW, to the ski slopes of Perisher and Blue Cow through the longest transport tunnel in the Southern Hemisphere.

SKITUBE TO SLOPES

Right in the heart of the New South Wales skifields is one of Australia's most remarkable engineering achievements – Skitube, the highest railway in Australia.

Skitube is an underground railway system designed to give skiers and visitors a quick, comfortable ride to some of the best skifields in the country – Perisher Valley, Smiggins Hole, Guthega, and Australia's latest and highest ski resort, Mt Blue Cow.

It is said to be the fastest rack-rail train in the world with a top speed of 40km/h.

The Skitube train journey covers a distance of 8kms with 6kms through a solid rock tunnel, the longest of its kind in the Southern Hemisphere. It was developed in a joint venture by the Kumagai and Transfield corporations.

"Each train can accommodate 900 passengers and their ski gear and luggage for the 17-minute journey to Mt Blue Cow, stopping at Perisher Valley on the way," says Colin Toll, the manager of Skitube Joint Venture.

"During peak times in winter, the trains leave Bullocks Flat terminal every 20 minutes so that skiers do not have to waste valuable skiing time in queues miles long or in travelling to the mountain."

The Bullocks Flat Terminal is below the snow line just off the Alpine Way and caters for most skiers' needs. There is car parking for 3000 cars and for 250 buses.

Apart from the ticket office and information centre, there is a ski hire shop and a snack bar. Bus drivers have their own private area in which to relax after journeys from Sydney and Melbourne and as far away as Adelaide and Brisbane.

The Perisher terminal is in the heart of the snow, with the ski lift and ski school just metres away. Upstairs in the terminal, there are a licensed Italian restaurant, a coffee shop and snack bar, plus a gift shop, photo processing outlet, lockers, oversnow transport and toilets.

Skitube is the only way to get to Mt Blue Cow, the newest and highest ski resort in Australia. The terminal features a restaurant, takeaway buffet, an outside eatery and bar.

It also has lockers and seperate ski schools for adults and children.

BR CONSIDERS TELENET

British Rail is considering operating its own private telecommunications network to compete with British Telecom and Mercury. Two options are under review, one involving a service in competition with British Telecom, the other consisting of offering the spare capacity on the BR telecom network to others.

British Rail owns a private voice data and communications network linking its stations throughout the country. These facilities could be used for offering pay phone and facsimile services. Major initial targets would be BR freight customers whose plants could be linked over the rail telecom network.

WINDOW SEAT

BR'S NEW RECORD

One of British Rail's new flagship Wessex electric trains has set a world record with the highest speed ever recorded for a train running on third rail 750 volt DC.

The train made the 228km journey from London's Waterloo terminus to Weymouth in southern England in just under two hours at an average speed of 115.3km/h. During the run, the 10-car train touched just over 175km/h to set the new record.

British Rail said the record, set despite being held up by a broken rail, was made possible by a combination of new third rail electrification and the new air-controlled class 442 Wessex train.

The director of British Rail's Network South East, Mr Chris Green, said: "We have passed the two-hour time barrier on a route which originally took the steam trains three hours to cover." The present 20-year-old stock, to be replaced by the Wessex trains, has a top speed of only 145km/h. A new fleet of 24 five-car units is now being built.

Mr Green added: "We have cruised at 161km/h with a very smooth and quiet ride."

The new record was one of three set within 48 hours on the country's busy Southern Region. Two days after the Weymouth run, a new class 319 Thameslink train became the first to top 161km/h on the London to Brighton run.

The eight-car class 319, one of Network South East's new dual voltage cross-London service trains, did the 81.5km journey in 39 minutes, 15 seconds at an average speed of 124.7km/h. The previous best was 41 minutes 38 seconds.

On the return journey to London, the train set another network record with an average speed of 126.1km/h to complete the run in 38 minutes 56 seconds.

VIDEO AND FM ON OVERLAND FIRST CLASS

The popular overnight sleeper/seat service between Melbourne and Adelaide, The Overland, now provides video movies and FM radio for first class sitting passengers.

Passenger receive the sound through individual pocket FM radios with earplugs. Radios are available from the Club Car for sale at $8 or on payment of a refundable $8 deposit. Passengers may use their own FM radios provided headsets are used.

A video film is screened each night and four channels of music operate throughout the night.

Spring Makers

FOR THE STATE COACH

Lovells Springs were chosen to produce the beautiful cee springs and the full elliptical springs used to suspend the magnificent State Coach. Lovells Springs are one of the few springs companies in the world capable of producing these springs, which are a work of art.

LOVELLS SPRINGS

CRAFTSMAN BUILT SPRINGS

The same craftsmanship that went into building the coach springs goes into every spring made by Lovells Springs.

Head Office: 199-209 Parramatta Road, Homebush, N.S.W. 2140. Telephone: (02) 76 0501.
Also at Parramatta (02) 630 1234. Blacktown (02) 621 3676. Flemington, Vic. (03) 376 0777.

The Swiss Federal Railways (SBB) has had its first locomotive body for the Zurich S-Bahn transferred from the Swiss Locomotive and Machine Works to Asea Brown Boveri for the installation of electrical equipment. SBB has ordered 50 new locomotives.

WINDOW SEAT

CARRIAGE TRADE

Eighty-year-old South Australian Railways suburban end-loading passenger cars at the Barossa Junction motel.

Until 20 years ago, ancient Brill railcars provided the local passenger rail service into the Barossa Valley. Today, four of them are standing within 100 metres of the main line, still playing a part in the life of the valley.

With four old Adelaide end-loading suburban passenger cars, some Redhens and trailers and a mixture of freight wagons of the Webb era, the Brill railcars are part of an unusual motel, restaurant and conference centre called Barossa Junction. It was built on the site of the old Barossa drive-in, a few kilometres east of Tanunda amid the vines of this renowned wine area.

The brainchild of owners John and Ruth Gordon (part-owners of the Buffalo sailing ship restaurant at Glenelg), it opened on a small scale three years ago.

The dining rooms, reception area and bars are built in and around several old bogie M vans and DW louvre vans. Even the stage is a bogie van with the side cut away.

The motel units, all converted passenger cars, have air-conditioners, TV and ensuite bathrooms.

First installed were the four 80-year-old end-loading suburban cars. Of a type running on Adelaide suburban services till the mid-1970s, they had been converted to workmen's sleeping cars by the South Australian Railways. In this form they survived in AN service, as did the 60-year-old model 75 Brill railcars. Of more recent vintage are the 860 class Redhen trailers (late 40s) and the 300 class Redhens (mid-50s).

With one exception each of the 19 cars has been divided into two motel units. There is a unit fitted for use by the disabled, and one Redhen has become one large suite.

While the interiors are all refurbished, the painted exteriors still bear the signs of many years of hard work. The walls of the dining and conference rooms are decorated with historic train and tram photographs and prints and old railway signs and plates. Around the yard are signals, signs and other memorabilia.

Young people from all around the Valley converge on the Junction for a Friday night disco, it is a regular conference venue, and it shares with nearby Kaiser Stuhl winery a thriving business in Saturday night train tours from Adelaide for an evening of wining, dining and dancing.

Barossa Junction offers good food and wine, good service and good fun. For the touring railwayman or enthusiast, it is a place for a nostalgic night sleeping aboard a train that goes nowhere.

WINDOW SEAT

A new £190 ($A393m) high-speed rail link to whisk passengers from Central London to Heathrow Airport in just 17 minutes has been given the go-ahead by the British government.

Transport Secretary Paul Channon has agreed that British Rail should work with BAA (formerly the British Airports Authority) on the scheme, to be known as the Heathrow Express.

Likely to be 80 per cent financed by BAA, the service will run from Paddington Station terminal every 15 minutes. It is expected to open in 1993 and carry 10 million passengers a year.

A new branch will be built off BR's Western Region main line into the airport, with stations under the terminal building. Mr Channon said: "We now have the prospect that Heathrow will have passenger transport connections to Central London fit for the 21st century."

Work could start on the link in 1990. The high-speed link was one of a number of options Mr Channon had to consider. London Underground had also suggested a new link, and there were three private-sector options.

Once, not so long ago, some manufacturers' products were deliberately made with a very short life cycle. The idea was that they'd wear out. Be replaced. To wear out and be replaced yet again. High turnover, it was thought, meant high profits.

But times have changed. No longer can we afford to expend our energies and resources as if there was no tomorrow.

Today, more and more manufacturers are realising the cost benefits of using durable, low maintenance Stainless Steel for their production processes.

Its inherent strength, good looks and ability to resist corrosion, together with its many other attributes makes Stainless a viable alternative for lifecycle costing.

So if you think the concept of planned obsolescence has worn a bit thin, consider the advantages of Stainless. It's one material with built-in permanence.

LYSAGHT STAINLESS.
Made to last.

Coated Products Division–Stainless

BHP Steel

Five Islands Road, Unanderra, Wollongong, N.S.W. 2526.
Telex: 29004. Telephone: (042) 71 6544.

Sydney: Robert Everett (02) 7088822. **Melbourne:** Ron Carmichael (03) 2687722.
Brisbane: Les Scott (07) 3450588. **Adelaide:** Dr. Peter Darlington (08) 2437373.
Perth: Dean Trenwith (09) 3300696.

Strategies BHPCPS486

WINDOW SEAT

Mr Frank Simmonds has been appointed as General Manager of Queensland Railways' Central Division, based in Rockhampton.

Mr Simmonds, who had a brief term as General Manager of the North Division in Townsville, was formerly the Mackay regional district manager. He replaces Mr Kevin Neil, who has taken up the position of Assistant Commissioner (Commercial), based in Brisbane. Mr Keith McElligott, formerly Queensland Railways' Industrial Relations Manager, becomes General Manager of the Northern Division, based in Townsville.

AMTRAK GROWTH

Amtrak, the United States' national passenger railroad system, recorded a 48 per cent increase in overseas sales during the '87 financial year.

More than $US3m was earned between October 1986 and September 1987, with sales skyrocketing 180 per cent in February. Britain led Amtrak's list of customers.

"Three months out of the 12, Amtrak international sales increased by over 100 per cent," said Eric C. von Schilgen, Amtrak's senior director of sales development.

Greatest growth was in West Germany (53 per cent), the Netherlands (40), Switzerland (35), and Argentina (30). Increases of at least 25 per cent were recorded in Britain, Japan, Australia, France, Sweden, New Zealand and Brazil.

FRESH GUARANTEE

West German and Italian shippers of perishable goods have a new rail option based on guaranteed transit times.

Called GuarantieCargo, the new option offers guaranteed transit times for perishable goods on specific lines between Italy and West Germany via Switzerland.

Railways accepting traffic with the GuarantieCargo label must refund 10 per cent of the transport costs on request by the shipper whenever guaranteed transit times are exceeded by more than an hour through the fault of the rail carriers.

NON-SMOKING CARS

Non-smoking sleeper cars will be introduced for a three-month trial on the Sydney-Melbourne Express and the Indian Pacific from 30 October, the New South Wales Minister for Transport, Bruce Baird, has announced.

"The new non-smoking sleeping accommodation will extend the choice already provided on the services," Mr Baird said.

"Market research has shown there is an increased demand for more non-smoking accommodation. On completion of the trial period, passenger reaction will be evaluated to determine if non-smoking accommodation should be further extended.

"State Rail already provides alcohol-free and non-smoking sitting cars on both the Sydney/Melbourne Express and the Intercapital Daylight services. This will provide an extra option."

Western Australia's new Commissioner of Railways, Dr Jim Gill, predicts a high-technology future for Westrail.

"The rail industry has a big future, and it will become an increasingly valuable part of WA's economic development," he says.

At 41, Dr Gill is the youngest-ever Commissioner of Railways and 12th in a line of rail chiefs that began with C. Y. O'Connor in 1891.

Dr Gill, previously Westrail's Director of Corporate Services, was born in Perth and graduated with first class honours in engineering from the University of WA. He has a doctorate from Cambridge University and a masters degree in public administration from Harvard.

He succeeds Mr Ian McCullough, 64, who was Commissioner for almost 10 years.

WINDOW SEAT

Imagine a train without wheels darting through the countryside just above the ground at anything up to 400 km/h — not a dream but a glimpse of the magnetic levitation train (maglev) of the future.

At the Advanced Ground Transport (AGT) test facility at Bath University, in western England, scientists are working on a new technique for maglev which they believe could halve the size of the power supply needed for the trains. The system uses linear synchronous motors (LSM) rather than the more usual linear induction motors (LIM).

Simply put, all maglev techniques are designed to make the magnetic elements in the train's motor exert forces on the track — made of relatively cheap mild steel blocks — which raise the train and also propel it forward. But whereas the LIM system involves alternating current (AC) conductors on the track, the LSM method would mean that all currents are in windings in the train.

The University's AGT test facility does not employ a track. Instead, four of the mild steel blocks which would form the track are bolted to a huge hexagon of stainless steel, milled to form a single billet. Special non-magnetic stainless steel is used because the mild steel blocks have to be magnetically isolated from each other. The whole assembly, weighing not far short of a tonne, is then rotated at speeds of up to 3000rpm, with magnets of a type which would make up an LSM wrapped around the rotating body.

Speeds of up to 2200rpm, equivalent to a train speed of 300 km/h, have illustrated that the LSM system could be a practical alternative to LIM, propelling a train on a magnetic cushion with a smaller power supply rating.

Australian technology 200 years down the track

'Engine 88' is Mount Newman Railroad's celebration of Australia's Bicentenary. Operating in Australia's rugged north west she pulls, with her sisters, 240 ore cars – 30,000 tonne trailing load.

Named *Terra Australis*, she looks like an Alco. But under her bonnet there's a high-capacity cooling system, and she is continually monitored by a bank of advanced loco logger electronics. The simulator trained driver is in control, cooled by air conditioning in the cauldron of Australia's desert – Australian technology now available world wide.

Calling the driver a driver is wrong. He is a systems controller – minimising in-train drawgear surges and able to drive to different operational parameters, minimum fuel or minimum system cost or maximum system throughput.

The train's protected by Australian CTC signals. She's at km post 421 on the 426 unbroken kilometres of long-welded, head-hardened rail. Laid on steel sleepers, with patent fasteners, insulating pads, and special new-technology turnouts. Impeccable track that's precision-measured and tamped, optically head-profiled, and preventively ground. All controlled by computer, of course.

A lot of unseen technology is rolling down to Port Hedland with the world's heaviest diesel train, in our 200th birthday photo. And the technology's as proudly Australian as the Aboriginal motive on *Terra Australis'* nose.

Thinking Railways think Australian. Australian Trade Commission, Canberra ACT. Telex AA 62193.

AUSTRADE
Australian Trade Commission

Mount Newman Mining Photo.
PSU A450